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ABSTRACT

The study presents teaching techniques for use with elementary learning disabled students which utilize right brain simultaneous (as opposed to sequential or left brain) learning processes. It also describes a 15-week classroom project utilizing selected techniques with 11 learning disabled children in grades 2 through 6. The literature review and the suggested techniques are both grouped into five categories: (1) visual displays, manipulatives, and movement; (2) mnemonics, metaphors, and analogies; (3) color, music, and rhythm; (4) relaxation, superlearning and suggestology; and (5) imagery, visualization, and fantasy. Within each category techniques are provided for reading/spelling, math, and general activities. Project results were analyzed in terms of behaviors (including grades and achievement test results), feelings (toward school in general, learning, and the new techniques), and teacher involvement. It was concluded that the techniques definitely improved the academic growth, attitudes, and classroom behaviors of the children. Academic achievement was demonstrated by comparison of pre- and post-achievement test scores. There was a 90% reduction in negative behaviors and a 60% increase in positive behaviors. There was a 45% decrease in the number of children who felt frustrated in their attempts to learn. (DB)

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Right Brain Teaching Techniques with Elementary Learning Disabled Children

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On traditional teaching:

"If the only tool you have is a hammer, then you tend to treat everything as if it were a nail." --Abraham Maslow

CHAPTER ONE

INTRODUCTION

Right Brain Teaching Techniques with Elementary Learning Disabled Children

Focus

I investigated the theory of sequential and simultaneous processing of information in the brain and how these processes pertain to the ways children learn. This theory appears to have direct instructional application since the manner in which a teacher presents material can enhance either sequential or simultaneous processing. Many Learning Disabled (L.D.) children learn information better when taught with methods that require simultaneous processing. My classroom research consisted of identifying and applying such methods, referred to hereafter as right brain teaching techniques, with elementary L.D. children. The outcomes hopefully give insight into the feelings, attitudes and achievement of children taught with methods which match their processing strengths.

Rationale

Numerous studies on how we learn have identified two separate ways our brains process information. "Sequential and simultaneous processing represent...two types of mental functioning that have been identified by cerebral specialization researchers

Borge, 1975; Kinsbourne, 1978; Luria, 1973 and his followers Das, Kirby and Jarmine in 1975 and 1979, and by cognitive psychologist Neisser, 1967 "(as cited in Kaufman, 1983, p.2). These distinct forms of mental processing are described by Williams (1983) as follows:

> The left hemisphere processes sequentially, in a step-by-step manner. This linear processing is temporal or time-related in that it recognizes that one stimulus comes before another....This type of processing relies on the ability to discriminate the relevant features, to reduce a whole to meaningful parts- in short, to analyze.
> The right hemisphere appears to specialize in simultaneous processing, or processing in parallel. It does not move from one feature to another but instead seeks patterns and gestalt. It integrates component parts and organizes them into a whole. It is interested in relationships (Williams, 1983, p. 25-26).

Dr. Judy Gunnison has shown, in her research on reading remediation, that a high percentage of L.D. children are strong simultaneous learners while exhibiting deficits in their sequential processing (Kaufman, 1983). Several additional studies have found that a majority of L.D. children score higher on simultaneous tests than sequential tests. When identifying the types of learners in my L.D. classroom, I have also found a high percentage of simultaneous learners.

Our educational system relies very heavily on left brain, sequential methods of learning. Strong simultaneous learners

do not do well in our schools where sequential, verbal strategies are emphasized in teaching. By using teaching methods which provide a balance of both sequential and simultaneous cognitive processing, teachers would be more likely to reach every child in their classroom. Clearly, teachers need to develop a repertoire of teaching techniques which stimulate simultaneous (right brain) processing. Remedial teachers, especially, need to rely on these less traditional techniques to ensure successful progress with their atypical learners. Unfortunately, very little has been formally developed or published in this area. While the idea that there are two different types of processing has been extensively researched and widely accepted, practical conversions of these ideas into classroom techniques have not been readily available. Teachers have had to rely on their imaginations and knowledge gained through prior experiences in trying to devise methods that work with these strong simultaneous learners.

It is very important for teachers to understand the impact of their teaching methods. Recent publications (e.g., Williams, 1986; Mannies, 1986) imply that if all teachers would consciously integrate right brain teaching techniques in their classroom, they would not "loose as many children through the cracks." Not only would such techniques help simultaneous learners achieve success, but they would also be helping to more fully develop the learning potential of all children. As Nancy Mannies (1986,p.127) states, "...the two hemispheres of the brain work together to complement and reinforce all output of understanding." This

suggests then that "...as educators, we must present a balanced curriculum that will strengthen both sides of the brain" (Mannies, 1986,p. 127).

Research Design and Methods

During this project I identified the extent to which right brain teaching techniques impact L.D. children's learning, attitudes, behaviors and performance in school. I identified and compiled a collection of teaching methods which encourage simultaneous processing and that teachers can have readily available to them. From my readings, I determined that these methods fall into two categories: (1) general guidelines to be used in setting up specific classes and activities (e.g., a pattern to follow in setting up a fantasy experience) and (2) the actual activities themselves (e.g., writing spelling words using color-shock). These activities were mainly obtained through my literature readings.

I then incorporated a selection of these techniques into my classroom presentations over a fifteen week period, thereby gradually converting my teaching to reflect a majority of right brain techniques. Most of these techniques did not require curriculum alteration: they are different approaches to presenting the everyday school curriculum. I suspect that teachers do not need extensive special training to use these methods. More than anything else, teachers simply have to be consciously aware of

the need to incorporate methods which encourage both sequential and simultaneous cognitive processing by their students.

My project was set up in the following manner: Data collection proceeded for fifteen weeks, from February 1 - May 27, 1988 with one week off halfway through the project. I worked with second through sixth grade L.D. children in the areas of reading, English, spelling and math. The number of children in each group varied according to their particular needs. The levels of materials used in these classes ranged from first through fifth grade.

Information about the child's feelings toward school, learning and the new methods used to teach the children came from teacher-constructed attitudinal questionnaires, students' journals and individual student interviews. Information about each child's performance and achievement in academic areas were obtained through pre and post-achievement tests, grades and classroom observations that focused on performance.

Attitudinal questionnaires were completed at the beginning and end of the project, and in Weeks 5 and 10. Individual interviews were conducted during the first, seventh and fifteenth weeks. A survey designed to assess parents' feelings about the L.D. program and their child's progress to date was given at the start and finish of the fifteen week period.

In addition to these data, I did weekly observations of each child, varying the class observed if possible. I also did a weekly tape recording of a class, took grades and collected student journals. I kept a teacher journal daily during the week.

CHAPTER TWO

LITERATURE REVIEW

OVERVIEW AND BACKGROUND

In the past 30 years an enormous amount of research has gone on as to how we learn. Luria (Das, Kirby, & Jarmine, 1979) and Sperry's (Sperry, 1968) separate research on brain functioning, along with many others, have given us great insight into the inner workings of the brain. After reading many of these studies myself, I have decided not to get into the very complicated task of explaining these experiments and results. The studies are listed in the bibliography for those who would like to delve into further study in this area. Therefore, it is sufficient to say that these results consistently support the theory that our brains process information in two distinct ways, sequentially and simultaneously. Put simply, this is often called left and right brain processing.

There is a real need for teachers to be trained in the current brain research and theories. Teachers need to understand how the brain functions and the implications of such understandings in the classroom. Only when teachers truly understand hemispheric specialization and how it relates to learning styles can they integrate their teaching methods to encourage development of both hemispheres.

Our present educational system has a dominance of left brain instructional techniques. Yet it is estimated that between two and three million students in kindergarten through twelveth grade have predominantely right brain styles for

learning (Richards, 1984). Our schools are currently discriminating against right brain learners. The learning disabled child is often an example of a right brained child in a left brained educational system. Research consistently shows that a high percentage of L.D. children have right brain information processing styles(Rubenzer, 1982). One study, for example, states that reading disabled children employ simultaneous processing in the early stages of reading when sequential processing is more appropriate (Kirby & Robinson, 1987). Another finds that low ability students use either right or left brain processing while high ability students have a good integration of both (Shannon & Rice, 1983). Rita Dunn (1988) says children are more tactile learners in the primary grades with a gradual movement to visual learning. Auditory learning for many does not develop until after sixth grade, and many underachievers may not develop this ability until high school, if at all. Dunn (1983) also suggests that right brain children have different environmental and organizational needs than left brained children in the classroom.

Obviously, if we are to maximize intellectual growth we need to include right brain teaching techniques in our classrooms. This will not only help regular students "learn more efficiently and with greater success" (Richards, 1984), but can make the difference between success and failure for our right brained populations. I truly believe we can reduce the number of children placed in an L.D. room if all teachers would

make a conscious effort to teach to both sides of the brain.

Before getting into the different types of right brain techniques, it might be helpful to understand the different characteristics involved in sequential (left brain) and simultaneous (right brain) processing. We need to understand where each process is used in terms of academic learning before we can apply these findings to a style of teaching. Following is a look at how sequential and simultaenous processing come into play in the areas of math, spelling and reading. These summaries come from the Kaufman Assessment Battery for Children Interpretive Manual (1983).

Math moves from concrete relationships and ideas to the abstract. Early math depends on the child interacting with objects. Simultaneous (right brain) processing helps at this level to provide the concepts needed for abstract procedures later on. Place value, addition, and subtraction with no regrouping are simultaneous in nature. Multiplication and division rely on sequential verbal strategies and memorization. Higher level problems, fractions, geometry, measurement and time require both methods of processing.

Sequential (left brain) processing in spelling skills is involved in memory for words and ability to match letter patterns to phonic patterns. Simultaenous processing, on the other hand, is used in remembering the configuration and shape of letters in a word and in generalizing and applying spelling rules.

The development of decoding skills in reading requires

sequential processing while text organization, letter identification, sight words, and configuration of words all involve simultaneous processing. Simultaneous processing is also used in such higher level reading skills as understanding conceptual relationships, comprehension of events and contextual reading (Kaufman, 1983).

This understanding of how sequential and simultaneous processing are involved in different academic areas is a first step in our developing teaching methods to use with strong simultaneous learners, whether it be in a remedial setting or as a way to be sure we are reaching all types of learners in our room.

While the left/right brain theory is widely accepted there are those who disagree with it. Before describing techniques for right brained learners I want to briefly present some opposing viewpoints.

Some studies (e.g., Hynd & Obrzut, 1981) indicate that "normal" and L.D. children do not differ neuropsychologically in left/right brain processing. Rather, they differ in their overt performance and ability to efficiently process stimuli. According to the authors this difference is mainly due to attention deficits. They also spoke of limited evidence that L.D. children inefficiently share information between the two hemispheres. They contend that any technique that decreases distractability would be promising and should be pursued rather than trying to strengthen lateral preferences.

Jerre Levy (1982) accepts the theory of differing left

and right brain processes but contends that both halves synthesize the information to form a whole concept. Therefore he rejects the idea that schools are left brain biased.

Hynd and Obrzut (1981) are correct when speaking of L.D. children showing attention deficit problems. In working with L.D. children I, too, have found many of them to have great difficulty in attending to instruction. But I am not convinced that their attention deficit is the sole cause of their problems. I have worked with L.D. children who exhibit no attention problems whatsoever, but who still cannot achieve normally in school.

Levy, along with Hynd and Obrzut, talk about their skeptism in regards to the premise that the two hemispheres fail to share information and work together. Granted, more research could be conducted to document this theory. But I contend that, regardless if this idea is proved beyond a shadow of doubt, if there's even a slight possibility this occurs, we owe it to our children to pursue instructional techniques that deal with this problem. At best, we can boost academic growth and reach a segment of our school population that has been previously overlooked. At worst, we can enrich our traditional teaching methods, spark new interest and excitement in the classroom and involve more modalities in learning than we do with our present techniques.

In researching the techniques to use for stimulating right brain processing five categories seemed to take shape. I grouped these techniques as follows: (1) visual displays, manipulatives and movement; (2) mnemonics, metaphors and anologies; (3) color, music and rhythm; (4) relaxation, superlearning and suggestology;

and (5) imagery, visualization and fantasy. All of these techniques provide alternatives to the verbal instruction that is so pervasive in our schools. The integration of these techniques into the classroom helps to maximize our children's potential for learning. These categories will be discussed separately.

VISUAL DISPLAYS/MANIPULATIVES/MOVEMENT

This is the most commonly known category that I will be dealing with, yet it is probably the hardest to describe. First, it is a very diverse category that encompasses many techniques. Secondly, most teachers are familiar with and have used variations of these techniques in their rooms for years. What I hope to accomplish in this discussion is to refresh our memories as to why these techniques are so beneficial, especially to right brained children, and to get teachers constructively thinking about how we can further develop our use of these activities in the classroom.

Children who are right brain oriented are often visual learners. There are many techniques teachers can use to help students organize verbal information and to focus their attention on the important points made during the lecture. Williams (1983), in her book Teaching for the Two-sided Mind, gives an excellent explanation of the wide varieties of visual displays. They are especially useful as alternative techniques in presenting information and in promoting understanding of content

area material. They provide students with a frame of reference for placing and synthesizing incoming information (Darch & Carnine, 1986).

Cluster maps, idea sketches, picture writing, graphing, cartooning, doodling, mandalas, expressive drawings, constructions, key words, charting, diagraming, illustrations, films and photographs are all graphic representations of information. "Each has its value for representing information of a particular sort and the use of each one extends and expands it's makers viewpoint" (Williams, 1983, p.93).

Key words, written on the board as information is given, helps focus attention on important aspects and reinforces the lecture. Providing a completed sample or demonstrating a problem for children helps them visualize what needs to be done. Mandalas, which are images and pictures arranged within a circle, can be used in any subject to clarify ideas and concepts. Cartoons, idea sketches, drawings and other art activities provide enjoyment as well as increasing understanding of content material.

Mapping is a less structured form of outlining. It is a way to display information to show relationships visually. It can be used as a study skill in reviewing information or as a problem solving device. One specific type of mapping provides a visual design to deal with verbal ideas and is used to integrate right/left brain functioning in reading and writing (Stahl-Gemake, Wielan, & Sinatra, 1982). Depending on the author, it is known my many names such as mind maps, webbing,

semantic mapping, and clustering. It is a process much like free association where inspiration and insight are unlocked as the right brain looks for meaningful patterns (Rico, 1983). The main idea is placed in the center of a page and circled. Other ideas are arranged around that word with connecting lines to show relationships. Such mapping allows for unlimited ideas to be added. It shows the connection of ideas and gives immediate feedback on the process (Richards, 1984; Williams, 1983).

The kinesthetic sense is a major avenue for learning that is often overlooked in school. Teachers sometimes assume these needs were met in preschool experiences and in extracurricular activities outside of the classroom setting. Yet it is absolutely essential to provide this type of learning experience for younger children. Their learning needs to contain information coming in from all their senses. Kinesthetic learning for older children has educational benefits also. It gives additional understanding of a subject, develops a valuable thinking modality and gives kinesthetic learners a chance to succeed in the classroom (Williams, 1983).

By providing situations in which manipulatives are used, teachers are helping their students to organize their thinking so that they begin to see relationships or are able, for example, to follow the steps in a math problem (Thornton & Wilmot, 1986). Visual and auditory modalities can be used in conjunction with manipulatives to maximize the child's chances for success. Blau and Sinatra (1981) discuss the usefulness of involving kinesthetic/tactile experiences, such as those used in the

Fernald VAKT method, in learning vocabulary in reading, especially for the severely word-disabled. In math, the use of manipulatives offers concrete experience as the basis for understanding concepts and providing kinesthetic stimulation (Williams, 1983). The teacher can gradually move to more abstract representations of objects after giving the child plenty of time to use the actual objects themselves (Serio, 1984).

Many children who are right brained oriented learn by moving. The more they involve body movement with learning, the better they think and the quicker they grasp a concept. Body gesturing is a form of movement and is an excellent memory aid. By putting a gesture with each concept needed to be learned, retrieval of the information can often be obtained simply by using the gesture (Williams, 1983). Teaching movement games and dances provide kinesthetic learning and can encourage creativity.

The last technique in this section deals with direct experience. Direct experience such as field trips, lab experiments, the use of real objects, and primary source materials all involve a child in learning as no other technique can. Simulations and role playing place the children in situations where they can create experiences for themselves. They are excellent ways to study subjects and to develop self-awareness. Direct experiences contribute to creative thinking and promote active involvement in areas children might normally shy away from. They offer important avenues for learning that should be routinely incorporated into the school day.

An excellent right brained technique that focuses on recognizing and understanding patterns is the use of metaphors. Metaphorical thinking is the making of connections between new and familiar material by finding a common trait or relationship between the two. It makes use of previous experiences and knowledge in understanding new concepts (Williams, 1983).

Training in metaphorical thinking can improve academic achievement (Williams, 1983). The use of metaphors in the classroom can organize and help students remember information. It is an excellent technique teachers can use to either introduce new material or review previously taught concepts. Metaphors are teacher generated when introducing a topic but often student generated during review sessions. The metaphors students create can show the depth of their understanding of the material. They can also be used to stimulate creative writing where new ideas and connections are encouraged. For the novice user of metaphors, Donald and Judy Sanders (1984), in their book Teaching Creativity through Metaphor: An Integrated Brain Approach, give many excellent detailed lesson plans using metaphors that can be adapted to a variety of classroom situations.

Analogy strategies can be used to help students visualize relationships between concepts. In situations where verbal sentences such as "cow goes with calf as sheep goes with ____" are used, they can be encouraged to visualize and imagine the

scene in their mind. This will enable students to readily see the relationships intended (Kaufman, 1984).

Analogy strategies also appear to play a crucial role in the development of reading skills and need to be taught to disabled readers. While competent readers intuitively develop these skills, disabled readers need direct instruction in comparing unknown words and making comparisons about letter combinations (Wolff, Desberg & Marsh, 1985).

Mnemonics are memory techniques that integrate simultaneous and sequential strategies (Richards, 1984). Pictures can be used to demonstrate letter sounds. For example, a picture of a goat named George represents the two sounds the letter g can make. These types of mnemonics can be especially helpful to right brained learners who often struggle with phonics. Another type of mnemonic is remembering phrases or sentences as memory crutches for difficult spelling words. "My shoe is in the canoe" conjures up an image that the students can remember while reminding them that canoe ends like the word shoe. When using mnemonic devices, the sillier and more bizarre the teacher can make the image, the easier it will be to remember.

COLOR/MUSIC/RHYTHM

Since children who are right brain oriented are often visual learners, using color whenever possible can be especially helpful in teaching them. These children are attracted to bright

colors and often react emotionally to them. The use of color is a simple way to add another stimulus in our attempt to help them learn. Color can be used to help separate and organize ideas, stimulate creativity and aid memory. Color writing helps those who have difficulties with visual discrimination and directionality. Color captures the child's attention and its uses in curriculum are limitless (Vitale, 1982).

Music and rhythm are useful in creating relaxed learning environments. They can help our minds relax and become receptive to incoming stimuli thereby aiding retention of material. Choral reading, chanting spelling words, and simple dance and singing games to accompany academic instruction can all aid right brained students. They can concentrate on the beat of the music and use the rhythm to reinforce memory tasks (Lipton, 1984). Dr. Lozanov (Ostrander & Schroeder, 1980; Prichard & Taylor,1980), who I will discuss more fully in the next section, believes music in a specific rhythm effortlessly opens up our learning potential beyond what we currently believe is possible.

RELAXATION/SUPERLEARNING/SUGGESTOLOGY

Numerous studies have shown that relaxation techniques facilitate academic progress and minimizes students' difficulty in attending to educational tasks (Zenker & Frey, 1984). Relaxation exercises presented daily in a group teaches students how to focus their attention and improve their concentration

(Fadely & Hosler, 1979). It inhibits anxiety and hyperactivity and allows learning to take place (Casebeer, 1981).

Relaxation is one of the most important skills we can learn. Children can improve test scores, sports performance, even social skills when they are relaxed. It is a skill they can use to counter tension in all kinds of situations (Hendricks & Wiels, 1975). Relaxation also helps creativity. Studies have shown that performance on both verbal and nonverbal creativity measures was significantly improved after systematic relaxation training (see, for example, Rubenzer, 1982).

Suggestology, superlearning, or accelerated learning are names for variations on the same theme. Originally developed by Dr. Lozanov in Bulgaria, they represent a holistic approach in education that should be used in learning (Yellin, 1983).

Dr. Lozanov has incorporated ideas, theories and research from many broad areas to develop his notion of superlearning. It is a tapping into the 90% of our brains that we typically do not use in order to unlock capabilities we are unaware of having. His system uses specific rhythms, breathing patterns, music, and meditative states that provide a framework teachers can use to enhance and accelerate learning (Ostrander & Schroeder, 1980).

Prichard and Taylor (1980) state that this technique is built on three premises:

> (1) Human potential is far greater and more diverse than we currently imagine and than current methods lead us to think possible; (2) A significant portion of experience

that we feel or assume to be so is comprised of unconscious processes; and (3) Included in these unconscious processes are images, expectations and limitations of self and others that can limit or enhance our capabilities. Much of current failure to learn stems from these negative beliefs.

The two basic components of Dr. Lozanov's program are the relaxed state and the synchronized rhythms. Breathing patterns and the specific 4/4 time music synchronizes and slows down body rhythms to the beat of the music. The music helps the flow of mental imagery, which not only develops memory but creates a relaxed meditative state in the body. Data to be learned is chanted with various intonations in rhythm to the music and the students' breathing. These rhythms (data, voice intonations, music and breathing) link with the unconscious and strengthen the information signal to enable the person to retrieve information at will (Ostrander & Schroeder, 1980).

This program has been used throughout the Soviet block countries with great success. Information has been slow to reach the United States but several states around the country have experimented with Dr. Loazov's methods with encouraging results.

IMAGERY/VISUALIZATION/FANTASY

Imagery, or visualization, is the ability to see and manipulate pictures in your mind. The visual image is the major

way the right hemisphere communicates with us. Therefore, if we can incorporate pictures in our learning enviroment the creative abilities of the right brain will be utilized and these right brain preferenced children will more easily learn and retain information (Fadely & Hosler, 1979; Rubenzer, 1982). Imagery expands our capabilities and creates interest in routine subject matter. Helping children develop their ability to visualize will produce more effective learning. "Imagery is one of the powers of the mind that can yield in a short time vast amounts of insights" (Sommer, 1978, p.85). Because of this, it is an important component in problem solving. Imagery permits us to explore various outcomes for situations that would not be physically possible for us to attempt.

Children use imagery in learning spelling words, performing math functions,comprehending what is read, and in solving practical problems that involve spatial relationships (Williams, 1983). It gives students new ways to process information, develop thinking and social skills and promotes creativity--especially in writing, drama and music (Galyean, 1983; Roberts, 1983). Visual imagery is also important because it gives children a substitute system to use when they are deficient in their auditory-verbal processing ability (Forrest, 1981).

Since imagery plays such a crucial role in education, it is a crime when our curriculum does not help develop this skill. Teachers need to be aware of the importance of this skill and use activities that encourage and develop their students' ability to visualize. We can help by asking students to see in

their "mind's eye" the concept they are working with (Smith, 1988). Reading aloud from imaginative literature helps to develop imagery, as does talking about the visual images the child made after listening to a story.

A lot of research has been done with imagery and improved learning in the area of reading. Levin (1973), Pressley (1976), Cramer (1981), and Oliver (1982) all did studies which found that when students created images to go along with words, sentences or the selections they read, their recognition, retention and comprehension of the material improved. This works best when students create their own images rather than using someone else's visualizations (Bull & Wittrock, 1973).

DeMille (1973) feels our schools stifle children's imaginations and independence of thought while devoting little time to developing divergent and evaluative mental skills. He feels that imagery, or visual fantasies, offer reality training that does not discourage imagination. They open up the child's mind while helping him to think and visualize thoughts.

Fantasy can take us places we can not go physically. The ability to project ourselves exploring somewhere else or imagine ourselves as actually being something else stimulates our problem solving and creative abilities. We gain access to new points of view, giving us a fresh way of remembering information. Fantasies can be used to introduce new material or review the old (Williams, 1983).

Using fantasy gets easier as children gain confidence and trust in their ability to fantasize and realize that there is

no right or wrong answer. They are free to imagine and feel without fear of failure. Many students are filled with negative images of themselves and their ability to learn. They need to become aware of these negative images before they can change their behavior. We can help them do this through relaxation and positive visualization exercises. These exercises need to promote their image of themselves succeeding in school, being relaxed and confident in their ability to learn. When used in this way, fantasy can help defeat negative images by replacing them with positive images that help students believe in their own ability to learn and succeed.

The following chapter is a listing of the various right brain teaching techniques I have compiled while doing my literature review. During my actual classroom teaching, it was easy to devise my own variations to the ideas listed. No doubt, many new ideas will be developed as other teachers attempt to use these in their classroom. My purpose is to give interested teachers a listing of techniques to use in integrating right brain strategies in their own rooms. It is an attempt to make a single compilation of known techniques that can be readily referred to while still becoming familiar with the theories behind them.

CHAPTER THREE

RIGHT BRAIN TEACHING TECHNIQUES

Most of the following exercises have been used in my classroom with elementary age L.D. children. They are arranged accroding to subject area and referenced, where appropriate, to specific bibliographic sources. They are presented according to the five categories discussed in the previous chapter.

VISUAL DISPLAYS/MANIPULATIVES/MOVEMENT

Since this section contains some of the more commonly known techniques, it might be easy to overlook and miss some of the unique ways the authors have converted these techniques for classroom use. As I discussed in the previous chapter, this section contains such a wide variety of techniques, those listed below serve only as a guide to what might be done in your classroom.

READING/SPELLING

Visual outlining
- read story
- list events on board
- sequence events
- graph events visually (Richards, 1984)

Use word configurations
- outline with yarn or color
- make flashcards with word on one side and configuration on the other side (Vitale, 1982)

Use gestures or actions in introducing new vocabulary whenever possible (Williams, 1983)

Whole Word Approach
- write word with each letter a different color
- child says it and spells it while looking at it
- child closes eyes and spells it
- child sees and hears the word in his mind as he writes the word three times on the desk top with his finger (Vitale, 1982)

Use water and paint brushes to practice spelling or reading words on board - or have them erase the words from the board by tracing over them with water (Vitale, 1982)

Air Writing
- write the word and they say it
- they close eyes and visualize the word
- they spell it with eyes closed
- teacher spells it and they write it in the air with their finger while their eyes are closed
- they spell it and air write with eyes still closed
- they see and say the word in their head silently as they air write
- they open eyes and write the word on paper (Vitale, 1982)

Draw pictures of what is happening in a story (Vitale, 1982)

Magazine tracking - without lifting pencil go across line and loop
- all b's and d's
- ABC's in order
- specific punctuation marks
- nouns, verbs, adjectives, etc.
- words you know
- word families (Vitale, 1982)

Use word families to teach phonics and vocabulary (Kaufman, 1983)

Verticle writing of vocabulary or spelling words helps organize words easier especially for those with sequencing and reversal problems

c
a
t not cat (Vitale, 1982)

Use jumping jacks to reinforce spelling words (or clapping, jumping hopping, toe touches). Child spells word while standing still. Then does one jumping jack for each letter in the word. (Vitale, 1982)

Finger paint vocabulary or spelling words using paint, mustard, mayonnaise , shaving cream, catsup, pudding, toothpaste, frosting. (Vitale, 1982)

Back writing - have children in pairs and take turns writing words on each others backs with their fingers. (Vitale, 1982)

Trace words or numbers in a small tray or box of sand. (Vitale,1982)

Have child visualize words as an obstacle course - they tell which letters they can jump over, climb, crawl or slide down - they must do something with each letter (e.g., "the" - climb up the t, slide down the h, and crawl through the middle of the e).(Vitale,1982)

Grounding - before oral reading (or silent) help the child to focus his attention on the page - discuss picture, locate words, punctuation marks, etc. (Vitale, 1982)

Type vocabulary or spelling words.

Marching - before oral reading have the child march for a minute- it helps get both hemispheres in synch and promotes more fluent reading. (Vitale, 1982)

Read first and last sentence of a paragraph and then draw a picture of it. (Kaufman, 1983)

Clustering (semantic mapping) (Rico, 1983)

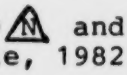
Use toothpicks and circles to help teach letters. (Vitale, 1982)

Recognize items in listings - circle all "tion" endings in these words; all 2's; fill in the missing part ÷ . (Kaufman, 1983)

Trace sandpaper words while blindfolded. (Kaufman, 1983)

Match words and sentences with pictures. (Kaufman, 1983)

Use letter cards to spell out words. (Serio, 1984)

Use different shapes for letters  and present new words using the shapes. (Vitale, 1982)

Use the shape of the mouth to help children learn letter sounds - just the visual prompt without the sound helps them remember. (Vitale, 1982)

Teach sequencing using body movements
- show a series of body movements (touch head, etc.)
- they show what you did
- they tell it in order
- ask for mixed up order 2nd, 1st, 3rd
- they draw what you did
- ask them to read 3 or 4 sentences, then read short story the sentences came from, then they tell which sentences were 1st, 2nd, 3rd and label them. (Vitale, 1982)

Tape out letters on floor with masking tape and child crawls over the letter while saying it. (Vitale, 1982)

Teaching syllables
- say two syllable words and child imagines two body movements to go with it (child must come up with the actions)
- then write words into syllables on board in color-coding each part (Vitale, 1982)

MATH

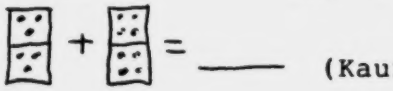
To represent subtraction concretely and visually
- give set of cubes to each child
- they write down the number they have
- call out the number to take away and they remove them and count the remaining number
- they write the subtraction sentence
- later can have them close eyes while the teacher removes some
- they then open eyes and either verbally or in writing give the subtraction sentence (Kaufman, 1984)

To help organize math problems on paper - turn paper and use it sideways - lines create natural columns to use in lining up numbers (Vitale, 1982)

Draw pictures of what's happening in story problems or act them out (Vitale, 1982)

Teach child to subtract by adding - start with the small number and using fingers or counters count until you reach the larger number (Vitale, 1982)

Use picture clues to solve problems key 6= 8=

 (Kaufman, 1983)

Use cuisinaire rods

Teach finger math - Chisenbop (Lieberthal. 1979)

Telling time
- use arms to teach time - kids stand and use their arms to show hand positions on the clock - do with eyes open and closed
- then transfer it to small individual clocks
- then transfer to paper and pencil time telling tasks (Vitale,1982)

Paste counters next to math problems or place counters where answer will go

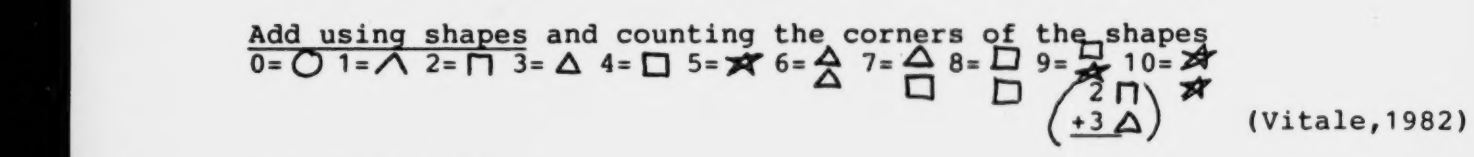
```
  2 oo        2
+3 ooo      +3
  5       ooooo
```

(Vitale,1982)

Look for patterns in column addition - pull out all tens, group all 5's etc. (Vitale, 1982)

Let them stand at the chalkboard and work out problems rather than sit with pencil and paper (Vitale, 1982)

Add using shapes and counting the corners of the shapes



(Vitale,1982)

Use manipulatives
- tangrams
- pattern blocks
- interlocking cubes
- dominoes
- attribute blocks
- geoboards (Thornton, 1986)

Borrowing
- color code 34 red take green from red
  -27 green
- circle in color the numbers they must change before doing the problem 3402
  -1263 (Vitale, 1982)

Carrying
- carry the number under the answer line instead of above problem
  49
  +15
  '4
- add the tens first and then add the ones and then add the two together
  49
  +56
  90
  15
  105 (Vitale, 1982)

Memorizing the nines table
- fingers on hands are numbered 1-10
- if multiplying 4x9, you turn down the 4th finger
- this leaves 3 fingers on one side and 6 on the other showing the answer 36 (Vitale, 1982)

GENERAL ACTIVITIES

Demonstrate rather than explain (Kaufman, 1983)

Role playing or social learning (Kaufman, 1983)

Multisensory teaching in conjunction with dramatization (Kaufman,1983)

Use cartooning as key to taking notes- the pictures cue memory as to what was said (Casebeer, 1981)

Have the children practice cursive handwriting by connecting all the letters together (Vitale, 1982)

Use mini-chalkboards
- trial spelling tests
- practice letter formations
- write creative thoughts while listening to music
- practice answering test questions during reviews (Vitale,1982)

Origami improves visual/spatial abilities and visual motor coordination (Richards,1984)

Use flashlight
- to help child attend to and focus on board, chart, etc.
- flash a certain number of times and they say the number - or add 2 sets of flashes
- write spelling words on board
- use to pace reading or reinforce left-to-right progression (Vitale, 1982)

Graphic representation of material
- key words
- diagrams
- charts
- maps
- graphs
- cluster maps (semantic mapping)
- idea sketches
- mandalas
- cartoons
- constructions (Williams, 1983)

Puzzles
- have child see completed product
- take it apart step by step
- visualize end results as child works
- give child a visual model (Vitale, 1982)

Visual models
- provide a completed sample
- do an example for the child
- use charts to remind
- if using color-coding - be consistent - if yellow = math then all math folders, work boxes, etc. are yellow (Vitale, 1982)

On visual displays use lines, arrows and spatial arrangements that describe text and relationships (Darch,1986)

To sharpen observation skills
- draw what they see
- describe what's seen at present
- turn off the sound in a film and tell what they think is going on (Williams,1983)

Direct experience
- lab experiments
- field trips
- use of real objects and primary source materials
- simulation
- role playing (Williams, 1983)

Multisensory learning
- dance
- movement games (Williams,1983)

Simple dances or singing games with movement
- helps them concentrate their attention on the beat of the music
- they gain control of their actions
- uses rhythm to reinforce memorization tasks
- helps them judge space, distance and body awareness
- their auditory discrimination is strengthened
- the sequence of dance steps improves auditory recall and organization skills (Lipton,1984)

Rolling in color
- put cloth or large sheet of colored paper on floor
- lie down on it
- visualize the color, smell it, taste it, roll in the color
- ask about emotions that the color makes them feel
- then they paint a picture with that color to express what they experienced (Vitale,1982)

Play 4/4 time music while they are working on an assignment or learning new material (Vitale,1982)

MNEMONICS/METAPHORS/ANALOGIES

This is a difficult section to give techniques for. Many mnemonics and metaphors develop from specific circumstances or content material. Their use is widely applicable to many situations. Consequently, this flexibility prohibits much detailed

discussion in this section. As previously mentioned, Donald and Judy Sanders (1984) give many specific lessons in their book. W.J.J. Gordon and Tony Poze (1972;1979) discuss metaphorical learning and take the teacher through a step-by-step introduction to the process. The use of metaphors, analogies, and mnemonics have great value in the classroom and I would encourage teachers to develop their skills in these areas.

READING/SPELLING/ENGLISH

Teach period, comma, exclamation mark and question marks through use of metaphors
- draw a picture of a person stopping, pausing, being surprised, and of questioning themselves (McCarthy,1981)

Use mnemonics to learn difficult spelling words (Suid,1981)

Word analogies - use word families to help generalize concept (Wolff,1985)

Use pictures as mnemonics as memory aids for beginning letter sounds, vowels, etc. (hook the moon, for example) (Richards,1984)

Invite children to imagine (visualize before verbalize) the relationships between words
- picture in your mind the cow with the calf and the sheep with the ___?___ - Cow goes with calf as sheep goes with...(Kaufman,1984)

COLOR/MUSIC/RHYTHM

The following techniques were some of the more enjoyable and more easily implemented techniques of those I have compiled. The children had great fun with these and the intuitive reading

technique led to my biggest academic breakthrough during my project.

READING/SPELLING/ENGLISH

Use colored pens to trace over the letters in a word (Kaufman,1984)

Intuitive reading
- child closes eyes and tries to see favorite color
- have the child point to where they see the color in their head
- say "Keep the color in you head. When you open your eyes, I want you to read but don't think about the words; think about the color in your head. If you don't know a word, let your color tell you what it is."
- child then opens eyes and reads
- if child gets stuck or starts to sound out a word, tell him to close eyes again and look for the word in the color
  *(I had a breakthrough with a girl I have been working with for two years with little success. She had all the skills stored in her right brain and just needed a path to get them out. While it does not work 100% of the time and she still has a lot of problems reading, this is a great help to her.)(Vitale,1982)

Color rice by soaking it in food coloring overnight- or just use colored pens, yarn, etc.
- paste over existing punctuation marks - red=periods, blue= question marks, etc.
- after a few days they provide correct punctuation with no clues
- can also use with all verbs underlined in blue,etc. (Vitale,1982)

Marching
- before reading orally, have the child stand up a;nd cross lateral march to balance both hemispheres of the brain and help alleviate blocking
- not all children benefit - to test is it will help - have the child read a section then march then read a new section- if reading is better the 2nd time then use it
- the effect of this at first is only temporary but it accumulates over time especially when done several times a day (Vitale,1982)

Choral reading provides a rhythm that improves oral reading while it reduces stress of reading alone (Vitale,1982)

Teach child to practice spelling words by singing them to the scale or a song they know - once taught they can do it internally (Vitale,1982)

Underline syllables in words with colored yarn (Lipson,1984)

Chant spelling words (Richards,1984)

Make the beginning sentence, paragraph, top line of writing paper green to show where to start (Vitale,1982)

Use sensory systems
- use taste or smell - use jello for seeing, smelling and tasting color - visualize each color as they smell it, their bodies turn that color as they eat it (Vitale,1982)

Rainbows
- make rainbow letters - each in a different color
- rainbow letter scrapbook - paste on page and paste pictures for that letter around it in the shape of a rainbow
- writing paper - make each line a different color (Vitale,1982)

MATH

Combine music and movement whenever possible- for example sing addition facts or times tables while they clap hands or snap fingers to each number. They can also do jumping jacks while reciting the facts. (Vitale,1982; Lipson,1984)

Color code place value in large numbers 214,103,027 - put the 214 in green, 103 in red, and 027 in blue (Vitale,1982)

GENERAL ACTIVITIES

Color code whenever possible (Williams,1983)

Paste picture upside down and draw what you see from this perspective. To simplify this I drew one inch grids on the picture and then had the student reproduce it on one inch graph paper. (Edwards,1979)

Right brain children are more sensitive to color- have them write spelling words, vocabulary words, multiplication tables, etc. in color-shock (writing each letter in a different color) -especially helps those with difficulties in directionality, visual discrimination and sequential memory (Vitale,1982)

RELAXATION/SUPERLEARNING/SUGGESTOLOGY

Superlearning involves an entire way of teaching with very specific methods of introducing material. It has been proven to increase learning beyond what we currently feel is possible. The implications of this technique are very exciting. In my classroom I have done a lot with the relaxation training and firmly believe in it's benefits. Next year I hope to delve into the superlearning technique extensively and use it in my room. The actual way to teach is described in detail in the books by Casebeer (1981); Ostrander and Schroeder (1980), and Prichard and Taylor (1980) in the bibliography. Listed below are two techniques pulled out of context that I used in my room.

Students attend to the rhythm of their breathing patterns saying to themselves "In relaxation" during inhalation and "Out tension" during exhalation. (Hendricks, 1975)

Play 4/4 time music during homework or study time to increase retention and learning. Also play it during introduction of new material. (Vitale,1982)

IMAGERY/VISUALIZATION/FANTASY

I probably spent the most time incorporating these strategies in my classroom. I spent time daily doing drills and teaching the children how to develop and use their visualization skills. Some of them needed very little instructin while others needed a

great deal of work in this area. They all enjoyed these activities but they experienced varying degrees of success with these techniques.

READING/SPELLING/ENGLISH

Think of a picture in your mind of each sentence's context as you read it. (Levin,1973)

Vocabulary development
- encourage child to come up with own images of new words
- if all can't develop one let some share their images of the word with others (Bull,1973)

Read aloud from imaginative literature to develop imagery (Oliver,1982)

Talk about visual interpretations after listening to a story(Oliver,1982)

Before writing spelling words on test - visualize it - after writing it check what you wrote with the picture in your mind (Williams,1983)

For spelling or vocabulary words
- conjure up picture in mind of sandbox, empty chalkboard or blank writing paper
-visualize yourself writing the letters of the word as the teacher calls them off
- retain image of the word as long as possible; if it starts to fade, repeat letters
- once image is retained, ask child to call off the letters in the word backward fast (proof that the child really sees the word)
- when the child can do the above successfully, then at different times during the day ask the child to see the word in his mind again and call off the letters again, either forward or backwards
- if child can't, repeat the original process
- if child can still repeat word the next day, introduce a new word (Rico,1983)

Teach opposites through visualization
- have your body get cold as ice and become chunks of ice that form the letters of the word cold
- move your body the way they would if they were cold
- tell them hot is the opposite and to visualize, picture, feel, move as if hot
- discuss differences in feelings
- use happy/sad; like/dislike, etc.
- can use this to teach any vocabulary concept (Vitale,1982)

Make mental pictures of words, sentences
- close eyes, picture this word; draw a picture of it
- close eyes and picture the boy riding a bike to the store,etc.; open your eyes and match it to a picture
- close eyes and picture the scene as it is read
- what happens next; picture it in you mind and draw the picture; put a sentence underneath it
- read phrase by phrase picturing it as you go along (Kaufman,1983)

Visualize graphic features of words to be spelled and attend to if they look right (Kaufman, 1983)

Letters of the alphabet and sounds
- visualize object similar to the letter (m=mountains)
- visually compare to previously learned letter
- compare two letters (f and t) and see how they are alike or different (Gunnison,1982)

Dramatic play, pantomime the actions of characters in a story, reading aloud from imaginative literature (Oliver,1982)

Visual literacy
- coordinate series of single pictures to tell story
- since whole picture is there- they can develop a main idea of the story
- write sentence to go with each picture and relating it to the main idea
- show visual representation of the process

sentence

chain with linking word or phrase

sentence

- can use this to work on sequential, descriptive or compare/ contrast ideas (Sinatra,1980)

MATH

Visualize the steps in math story problems before doing it (Williams,1983)

GENERAL ACTIVITIES

Make vivid visual images in their mind and attach important facts to it (Williams,1983)

To improve memory
- observe surroundings for one minute
- close eyes and verbally describe surroundings
- then compare and contrast the two
- increase this exercise to eventually including reconstruction of the route taken to school, etc. (Richards,1984)

I also did daily visualization, imagery, fantasy, and relaxation exercises with the children using the books listed as Casebeer(1981) and DeMille (1973).

GENERAL STRATEGIES

These last techniques defied simple classification. Many of them can be used with all areas and techniques. Some of them are helpful tips that parents can employ at home.

Proceed from the whole to the part (Kaufman,1983)

First present overall problem or skill (Kaufman,1983)

Emphasize synthesis of information (Kaufman,1983)

Rely on visual/kinesthetic cue or procedures (Kaufman,1983)

Have items of information handled as a group (Kaufman,1983)

Concentrate on sight word vocabulary (Kaufman,1983)

Humor enhances integration of right and left brain. Encourage students to bring in humorous material. (Richards,1984)

Problem solving activities engage right brain in devising possible solutions and left brain in choosing one. (Richards,1984)

Lengthen think time for answers. (Richards,1984)

Encourage children to simplify and repeat an idea or information seven to eight times prior to going to sleep. This information may then be reorganized to provide new ideas or insights in solving the problem. (Richards,1984)

Encourage creative story telling, art and drawing activities (Kane,1984)

To encourage storage of information as an image, write material in upper left corner of the blackboard (Williams,1983)

To eliminate confusion of math pages
- present only one kind of problem per page
- do all addition first, then subtraction,etc.
- trace + signs green, - signs red
- copy all multiplication problems red, subtraction in blue,etc.
(Vitale,1982)

Right brain kids get frustrated with their lack of learning and need help to gain control of and learn to appropriately express their feelings
- several times during the day, ask how they feel about what they are doing
- make a "me" collage by cutting out words and pictures that apply to what they like or dislike
- lie on floor with eyes closed and ask how they physically feel - arms, anything hurt, etc.
- write their name in large letters on paper according to how they feel
  (1) make shape the way you feel about yourself- tall, thin, etc.
  (2) pick color that feels like your name and trace the letters
  (3) draw pictures around your name that tell how you feel about yourself
- have them use different tones of voice and discuss how they feel - for the next 1/2 hour we will all shout, whisper,etc. how did it make you feel; how did people treat you (Vitale,1982)

Use color and size to help organize school and home
- colored folders for different subjects
- coordinated colored book jackets
- organize desk according to size of books
- all blue clothing together in closet, etc.
- use color, shape, size, and visual pictures to shwo where objects are to be put
- clean room by first picking up all red items, etc. (Vitale,1982)

Working at random - child chooses order - which chores to do first, which problems on math page to do, etc. (Vitale,1982)

Creative dittos
- glue yarn or rice under answers
- instead of coloring pictures, make mosaics out of rice or paper
- make puzzles out of dittos
- let children design own dittos
- use real grass, leaves, etc. to add to picture (Vitale,1982)

Make difficult abstract concepts clearer by using absurdities
- helping verbs went and gone - the verb with the hole shot in it takes the helper because it needs help getting to the hospital
(Vitale,1982)

The following chapter will deal with the results of my implementation of these techniques into my teaching of L.D. children. I will not only discuss the academic changes that I observed, but also the attitudes and feelings of both the children and myself as we delved into right brain teaching techniques.

CHAPTER FOUR

THE PROJECT

SELECTION OF SAMPLE AND ORGANIZATION

SAMPLE SELECTION

My classroom consisted of fifteen elementary L.D. children. Two children were not included in doing the activities because they were mainstreamed for most of the day. Two other children participated but did not contribute to my data base because of the short amount of time they had been in my room at the time the project started. The remaining eleven children from whom my data were collected, varied in age from second to sixth grade and were seen in groups for reading, English, spelling, and math. The number of children in each group varied according to their particular needs and identified weaknesses. I used the same basic curriculum materials (ranging from grades one to five) as used by my colleagues in the regular classrooms. I decided to run my program for fifteen weeks stopping in mid-May, due to the restlessness of my children near the end of the school year.

PROJECT ORGANIZATION

The setup of my project involved many steps. By spending a lot of time in the initial set up, I was able to save an immense amount of work for myself later on. I had already done the majority of preparation before even starting my program, (e.g., development of weekly master plans) so that once into the

project I was able to concentrate on the actual teaching. The weekly master plans served as helpful guides to keep me focused on my timeline and on the issues I had identified as important. I will try to explain the process I used in an understandable fashion.

The first step in organizing was to make a general week by week listing of the data collection I needed to do (See Chapter 1). I had an extremely ambitious schedule, committing myself to eleven different types of data collection. Although I decided not to use two of them in my final analysis, I scheduled and did the collection for all of them. In future projects I would narrow data collection design to something more easily handled.

I then divided the fifteen tape recordings between the thirteen classes I taught so that each class was recorded at least once. On interviewing weeks I made a schedule of the eleven children so they would be spread throughout the week. I made a rotation schedule for weekly observations so that each child was observed in different classes throughout the project and so that I was observing only one child during each class. Finally, I decided that student journals would be written immediately after a new technique was used; I wrote in my teacher journal continually during the day.

My next job was to choose the tasks I would try in my classroom. Initially, I decided which tasks were feasible. Then I divided those activities into five categories: reading, math, spelling, English, and general techniques. I made fifteen folders, one for each week, and randomly picked activities from

the first four categories and placed them into the folders. Next the general category was divided into fantasy, metaphors, relaxation, and imagery activities and these were then also randomly placed into the weekly folders.

Following this, I went back to Week 1 and made a day by day schedule, spreading out the data collection so no single day was loaded. I then went through the techniques placed in that folder and decided on the day and class that each would be introduced. These techniques were carried over into the following week and added, whenever possible, to the new techniques for that week. This enabled me to slowly convert my style of teaching to a more right brain-oriented approach.

Data collection tools such as questionnaires, parent surveys, etc., were developed or copied, run off, and placed in the folder corresponding to the week they were needed. Examples of some of my organizing lists are included in Appendix A to make this process more clear to the reader. At the conclusion of this process I had fifteen folders with day by day requirements, activities, and data collections listed by classes and child. This enabled me to simply pick up the correct week's folder and pull out the master plan for that week. All the things I needed to do were listed day by day for me and all necessary explanations and materials were stored in the folder. At the end of the week, I simply took the activities from that folder and added it to the following week's folder, thereby increasing the number of possible activities I had to choose from. Thanks to my organizational efforts I had little actual preparation to do during the fifteen weeks and could

devote my energies to the actual teaching techniques and the recording of any necessary data.

DATA ANALYSIS

In this section I will talk about each of my data collections separately. They are divided into three categories: behaviors, feelings, and teacher involvement. The behavior section deals with data that looks at the performance and achievement of the children throughout the project. The next section discusses the childrens feelings toward school in general, learning and the new techniques. The final section discusses my involvement in the project and the effects this had on me.

BEHAVIORS

Grades. Weekly averages of daily grades in spelling, English, reading, and math were taken for the first 12 weeks of the 15 week project. The last few weeks of grades were not included due to the lateness of the year and because I felt they were not valid representations of the children's ability. I then took the grade averages from the 12 weeks prior to the start of the project to compare grade results both before and after the project.

Pre and post grade averages for the following areas are:

Table 1: Grade Average Differences

Subject	Pre Average	Post Average	Difference
spelling	77.4	84.4	+7 points
English	84.7	83.9	-.8 points
math	85.7	85.2	-.5 points
reading	83.0	82.0	- 1 point

The only positive change seen in the area of grades was in spelling, where overall grades increased by seven points (See Table 1). Seven children were recorded in this area. Two of these children's grades declined, one of them a strong sequential (left brain) learner whose grades dropped 10 points. Strong simultaneous learners' grades increased, three of which jumped 15 to 18 points. These two statements add weight to the contention that these activities tap into the right brain's learning ability.

The other three academic areas had slight decreases ranging from .5 to 1 point. In looking at individual scores in these areas no patterns emerge. Strong sequential learners' grades for the most part dropped during the simultaneous (right brain) activities but in one instance did rise. Some strong simultaneous learners, who experienced dramatic success in spelling, experienced grade drops in some of the other areas. However, the drops in these areas were not significant.

In looking at the specific activities used in these areas a general pattern can be seen. The spelling activities used in this project were more concrete, "hands on" types of activities while the exercises in reading, English, and math were more

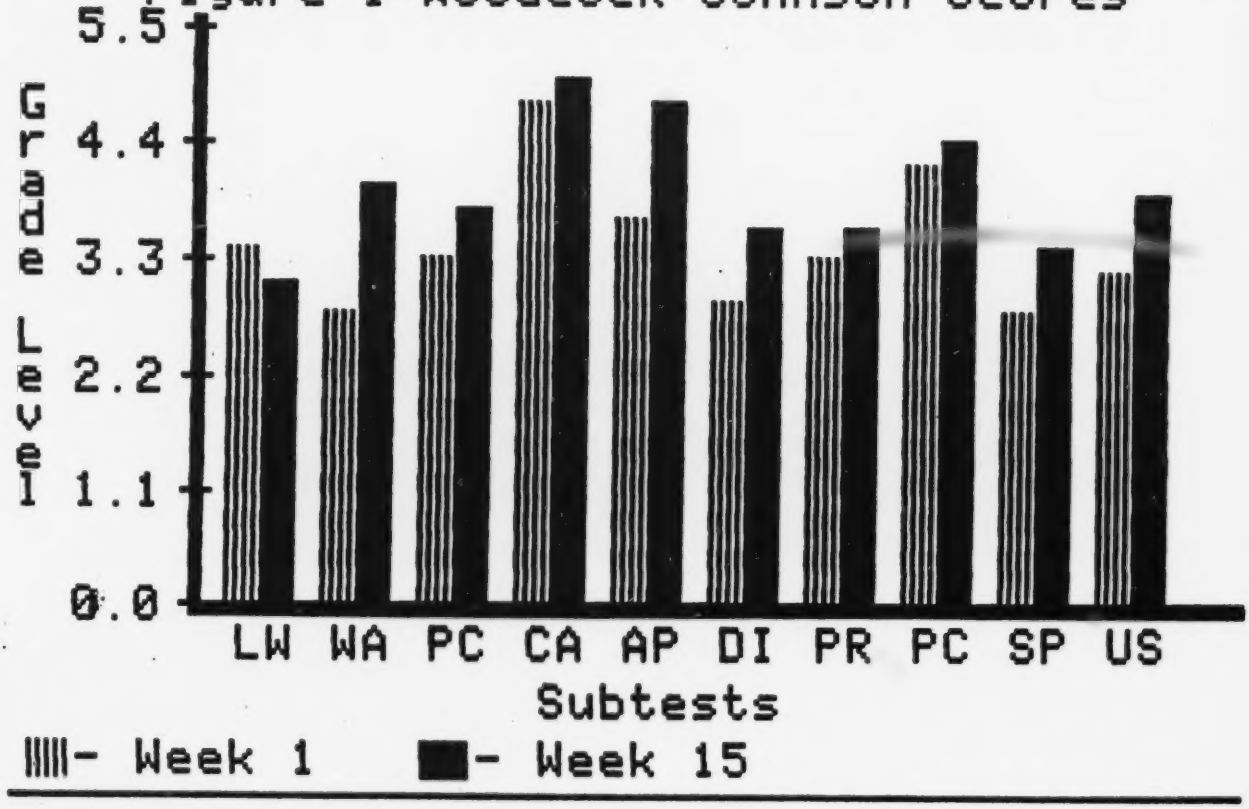
abstract and new to the children. The children's ability to get physically involved (e.g., jumping jacks, fingerpainting) in the spelling activities is something they were more comfortable with than the novel activities of visualizing, etc. that needed initial training to learn how to do.

Woodcock-Johnson Achievement Test. The Woodcock-Johnson Achievement Test (W-JAT) was administered in order to measure achievement levels both at the start and end of the project. It consists of the following subtests: letter/word; word attack; passage comprehension; calculation; applied problems; dictation; proofing; punctuation/capitalization; spelling and usage. The Woodcock-Johnson was chosen for its ability to show academic levels in months and because the subtests represented some of the different academic areas the project dealt with.

Looking at the W-JAT subtests, achievement results were much more favorable than my daily grades suggested (See Figure 1). Growth was seen in nine out of ten areas and ranged from two months to one year and two months in fifteen week's time (See Figure 2). While the average growth rate was 5.2 months, it is hard to determine just how significant this growth is. "Normal" children would be expected to progress 3.75 months in fifteen week's time (Woodcock-Johnson, 1977). L.D. children would be expected to progress at a much slower rate than that.

The greatest areas of growth were in the subtest of word attack in reading and applied problems in math (See Table 2). I find it very interesting to note that the two areas that increased the most are generally the most difficult types of tasks

Figure 1-Woodcock-Johnson Scores



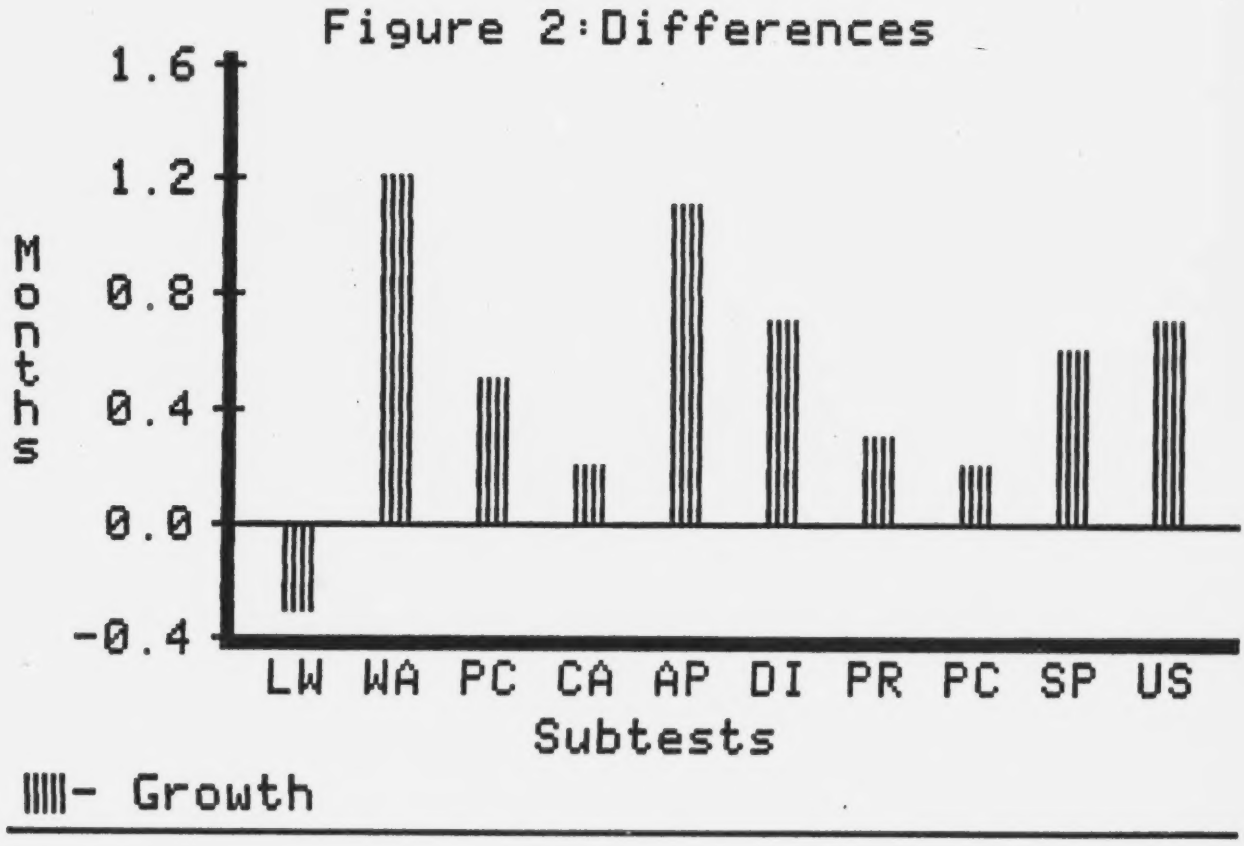


Figure 2:Differences
1.6
1.2
0.8
0.4
0.0
-0.4
Months
LW WA PC CA AP DI PR PC SP US
Subtests
- Growth

for L.D. children to do. The word attack section deals with pronouncing nonsense words. Traditionally L.D. children are extremely poor in regards to remembering and applying phonetic rules to words. The applied problems section, on the other hand, deals with story problems. This is usually a weak area for any child especially for L.D. children.

The applied problems in math subtest has an added stumbling block in that the problems are read to the child with only a simple picture representation to look at. This adds the element of auditory memory to the subtest. I believe, here, that the visualization exercise we did in class were responsible for the increase in these scores. Our extensive exercises and training in listening and developing mental pictures for what was heard helped my students solve these W-JAT problems.

The other areas of good growth (i.e., .5 or better) were passage comprehension; dictation (spelling words dictated to them); spelling (identifying misspelled words in sentences); and word usage. These subtest gains support the data found in students' daily grades showing growth in the area of spelling.

Table 2: Woodcock-Johnson Achievement Tests

Subtest	Week 1	Week 15	Change
Letter/Word	3.4	3.1	- .3
Word Attack	2.8	4.0	+1.2
Pass. Comp.	3.3	3.8	+ .5
Calculation	4.8	5.0	+ .2
Applied Prob.	3.7	4.8	+1.1
Dictation	2.9	3.6	+ .7
Proofing	3.3	3.6	+ .3
Punc./Cap.	4.2	4.4	+ .2
Spelling	2.8	3.4	+ .6
Usage	3.2	3.9	+ .7

Classroom Observations. Observation data were collected once a week for each child and varied by class observed when possible. I looked at a variety of observable behaviors during both teacher-led instruction and during independent seatwork time. The behaviors were coded as either desirable (positive) or undesirable (negative) actions. A sample observation chart is located in Appendix B. Only one child was observed during a class period. Children were unaware of being observed beyond normal teacher monitoring. When observing behavior I only marked a category the first time that behavior was observed. Many of the behaviors were not definitive enough to be counted (i.e., daydreaming; looks confused) and it was too hard to decide when one occurance stopped and another started. Therefore, I was not interested in how many times a certain behavior occurred during a class session. Tabulations of these observed behaviors were translated into percentages of people exhibiting each behavior during that week's observation. No attempt was made to eliminate observation sessions when no new techniques were being used. I wanted to see if these

techniques impacted on children's behavior regardless of the situation.

Positive Behaviors during Instruction. Five out of seven categories of positive behaviors show percentage increases over the fifteen week period (See Table 3). Increases ranged from 12 to 25 percentage points. "Joins in" had the most participation with an overall average of 73%. "Gives answers" and "looks interested" followed with 68% and 64% participation, respectively. One category, "asks questions," dropped 16 points while "looks interested" declined by three points. The 16 point drop in "asks questions" could be the result of a clearer understanding on their part of the material being taught. Since these techniques were supposed to match their learning strengths, perhaps they were no longer confused or in need of further explanation of the material.

The other common points in all of those weeks were active spelling assignments (e.g., color shock, jumping jacks, typing, and obstacle course) and lots of visualizing activities connected to reading and spelling vocabulary, passage comprehension and intuitive reading.

These findings support my feeling that the children reacted very positively to relaxation and imagery training. When told it was time to go to the rug for our sessions, they nearly tripped over each other to get the lights turned off, shades closed, and find their spot on the rug. I suspect they initially thought of

these activities as just pleasant games. But eventually transfer did take place in other areas (e.g., remembering spelling words) and I will talk about this in another section.

Table 3: Weekly Participation Percentages - Instruction

Positive Behavior	Week 1	Week 15	Overall Average
raises hand	18	30	28
gives answer	45	70	68
joins in	36	60	73
attends to present.	45	70	56
listens to others	27	50	42
asks questions	36	20	30
looks interested	63	60	64

Positive Behaviors during Seatwork. Of the ten categories identified as positive behaviors, five increased in percentage, four decreased, and one stayed the same. Like instructional behaviors, seatwork behaviors increased in Weeks 4, 5, 6, 7, and 14. "Asked questions," "looks interested," "works steadily," and "completes work on time" were the areas that decreased (See Table 4).

"Completes work on time" may have dropped due to our doing more group activities which resulted in less time for seatwork. The drop in "works steadily at the assignment" may have resulted from an increase in interaction among students or because it became harder, over time, for students to settle down after our group activities. The "looks interested" section had a 52% drop. This could be due to an overly high percentage of participation in the first three weeks of the program due to the Hawthorn effect. While "working steadily at the assignment" had a 50%

drop, it was still the highest category in terms of participation with an overall 66%.

Weeks 1 and 2 were high with 56% seatwork participation average across behaviors. Although Weeks 3-7 had participation levels between 40-50%, they were followed by a gradual decline of positive seatwork behaviors with an overall average ranging from 36-19%. Week 14 behaviors stood out at 49%, while Week 10 was low with 19.8% participation.

Table 4: Weekly Participation Percentages - Seatwork

Positive Behavior	Week 1	Week 15	Overall Averages
asks questions	18	0	20
looks interested	72	20	41
works steadily	90	40	66
completes work	72	50	59
passing grade	27	40	44
tries before asking	18	40	34
works quietly	36	40	46
ignores distractions	27	40	31
discusses work/peers	18	20	15
cooperates with others	0	0	6

Negative Behaviors during Instruction. All categories labeled as negative behavior decreased (See Table 5) over the period of the study. "Fidgeting" and "daydreaming" declined the most with 27% and 18%, respectively. Although "talks off task" and "looks confused" started and ended with none of these behaviors observed, Weeks 6-12 did have a few instances where these behaviors occurred. Weeks 7-12 saw the highest incidences of negative behaviors overall with Week 10 once again being the worst with 19.8%. No negative behaviors were charted during Week 15.

Table 5: Weekly Participation Percentages - Instruction

Negative Behavior	Week 1	Week 15	Overall Average
fidgets	27	0	6
daydreams	18	0	6
talks off task	0	0	13
looks confused	0	0	10
disturbs others	9	0	8

Negative Behaviors during Seatwork. All categories, with the exception of "disturbs others" decreased over the duration of the project with decreases ranging from 7-18% (See Table 6). "Talks off task" had the highest overall percentage of behaviors (28%) while "looks confused" was low with a 5% average. "Disturbs others" increased by 12%.

The first four weeks of the project had the highest incidences of overall negative behaviors. Weeks 5-9 had the least negative behaviors seen. Weeks 10-15 saw negative behaviors increase but overall averages were still lower than at the beginning of the project.

Table 6: Weekly Participation Percentages - Seatwork

Negative Behaviors	Week 1	Week 15	Overall Average
fidgets	27	10	12
daydreams	27	10	10
talks off task	45	27	28
looks confused	9	0	5
disturbs others	18	30	14
out of seat	27	20	12

Comparison of Behaviors during Instruction and Seatwork. Counts of negative seatwork behaviors were far higher than negative instruction behaviors except during Weeks 6-9 (See Table 7).

In comparing identical negative behaviors during both instruction and seatwork (e.g., disturbs others, talks off task) an interesting pattern was observed. In all but one instance, the percentage of negative seatwork behaviors occurring was roughly double the percentage occurring during instruction (See Table 8). In addition, all weeks, with the exception of Weeks 1 and 7, had higher percentages of positive behavior occurring during instruction than during seatwork (See Table 9). Apparently, the influence of the teacher being actively involved had an affect on the totals.

Table 7: Overall Weekly Averages of Negative Seatwork and Instruction Behavior

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
negative inst.	10	12	9	1	1	7	16	12	12	19	9	16	1	5	0
negative seat.	25	16	13	21	12	3	9	3	6	22	24	10	13	15	16

Table 8: Comparison of Negative Instruction and Seatwork Behaviors

Behaviors	Instruction %	Seatwork %
fidgets	6	12
daydreams	6	10
talks off task	13	28
looks confused	10	5
disturbs others	8	14

Table 9: Overall Weekly Average Comparisons of Positive Seatwork and Instruction Behaviors

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
positive inst.	39	60	55	78	84	69	41	43	56	28	46	41	51	72	51
positive seat.	55	56	44	49	42	41	46	36	36	19	28	29	36	38	30

Behavior Rating Form. The behavior rating form dealt with how I perceived each child (See Appendix C). This form used a likert scale with 5 being always and 1 being never. Composite scores of all answers were recorded and group averages were tabulated. I filled out the behavior rating form immediately prior to the start of the program and the week after the project was finished. I used these forms as a tool to see if behaviors, both positive and negative, were affected by the project, keeping in mind that there is a wide variety of circumstances that could affect the outcomes besides just what happened in the project. I filled out the first survey and did not look at it again until after the second survey was completed and the project finished. I did not want the situations or the form to influence the way I ran the project or interacted with the children. Before looking at the results I divided the questions into positive (e.g., showing confidence...) and negative (e.g., hesitating to express their opinions) behaviors. I then charted the results looking for an increase in positive and a decrease in negative behaviors.

Items 1,4,9, and 10 dealt with positive behaviors and an increase was seen in three of them. A 12% increase was noted in item 1, indicating that the children were adapting more easily to new situations and feeling more comfortable by the end of the project. Items 9 and 10 both showed a 14% increase in the children's confidence and assurance in their actions and their exhibiting a greater sense of self-esteem, self-respect and appreciation of their own worth. Item 4 saw no change and dealt

with how often the children were chosen for activities and their companionship sought.

Items 2,3,5,6,7,8,11,12, and 13, dealt with what I had predetermined to be negative behaviors. A 22% decrease was seen in Item 2 with the children now more willing to express their opinions. Item 5 showed a 10% decrease with the children not being as alarmed or frightened by changes and exams. Item 8 had to do with the children deprecating their school work, grades and work products and only showed a 2% decrease. No change was seen in Item 6 where the children seek support and reassurance from others. Items 3,7,11,12, and 13 showed an increase in behaviors. A slight 2% increase was seen in Item 3 when the children became upset by their failures. Item 7 dealt with the children being aggressive or withdrawn when scolded and increased 6% as did their continually seeking attention in Item 13. Bragging and boasting, Item 11, increased 10% while Item 12, children attempting to dominate others, increased 18%.

Having five of the nine negative behaviors increase was an unexpected finding, especially since an informal look through other data did not support this. I therefore went back to those five items and looked at them more closely. I had originally decided positive and negative behaviors using society's usual definition of acceptable and unacceptable actions. I felt dominating, boasting and aggressiveness fell into the category of negative behaviors. However one of the purposes of this project was to help these children change the way they felt about them-

selves. In looking at other data I knew the children were starting to feel better about themselves. One of the outcomes from this could be that for the first time in their life some of the children were saying "look at me and what I just did." In analyzing my population of children and really looking at the specific behaviors I decided to rethink my original choice to put Item 11 (bragging and boasting) in the negative column. Children who usually tried to fade into the background were now starting to talk about themselves and their achievements with confidence and on the surface that could be considered bragging and boasting. Similarly, Item 12, dealing with dominating or bullying, was reconsidered. In looking back at behaviors I considered dominating, it was often in game playing situations where previously docile children were now asserting themselves as to which game they wanted to play. Some were demanding to be leaders. Realizing this, I once again questioned my choice of putting this item in the negative category. As a result of feeling better about themselves these children were confident to finally speak up for what they wanted without fear of rejection or failure. With my population, this is a refreshing change. This left Item 3 with a 2% increase, and Items 7 and 13, both with a 6% increase. Item 7 referred to being aggressive or withdrawn when scolded. Looking at it in this new light I found it inconclusive. The children's willingness to stand up for themselves would be a positive change while withdrawing certainly would be negative. Since no record had been kept on aggressive or withdrawn behaviors, there is no way to determine the significance of this item.

Summary: Behaviors. Pre- and post-achievement tests, daily grades, classroom observations, and behaivor ratings were four types of data I collected to look at changes in children's performance and achievement over the fifteen week project. Impact on daily grages was minimal except in the areas of spelling. The types of activities used in spelling were more concrete, hands-on types of activities compared to the very different, more abstract activities being introduced in other academic areas. One also needs to keep in mind that many other factors (e.g., the child's health, mind-set, stresses, quality of the teacher's presentation of materials) can influence the types of grades received on any given day in addition to the method used to present the material.

In contrast, the achievement tests administered showed very favorable results over the 15 week period. The average rate of growth was 5.2 months during the project with some subtests showing over a year's growth. The L.D. children surpassed the expected growth level of normal children using the same methods introduced during the project. So even though determining academic growth proved inconclusive on a daily basis, overall academic achievement progress definitely was seen when looking at pre- and post-test scores.

Observation results were divided into instruction and seatwork with positive and negative behaviors identified in each. Ninety percent of the negative behaviors recorded during both

instruction and seatwork declined over the duration of the project. Incidences of negative behaviors during seatwork were double those noted during instruction with the exception of Weeks 6-9.

Sixty percent of the positive behaviors increased during the project. As with negative behaviors, there was a higher incidence of behaviors during instruction than during seatwork. There are some factors that could have affected four of the categories that did not increase thereby suggesting possibly higher percentages of increase in positive behaviors.

A pattern was seen throughout all four sets of observation data. Week four, five, six, and 14 had unusually high increases in positive behaviors while negative behaviors decreased. These weeks involved very active spelling assignments and saw the start of our relaxation and imagery activities. Conversely, Week 10 showed decreases in positive and increases in negative behaviors in all four sets of data. According to my records and personal journal notes, Week 10 had fewer activities introduced and those that were done were not very successful. Also a lot of time was taken up in collecting data from the children (e.g., filling out questionaires, etc.) during Week 10.

The behavior rating form showed 75% of the items I expected to increase doing so. Negative behavior items were not as conclusive and several items were called into question upon further analysis. After rethinking my original decisions about what determined positive and negative behaviors, two questions were removed from the negative category and added to the positive. Analyzing the new grouping, 85% of the behaviors expected to

increase did so with one item showing no change. Thirty-six percent of the negative behaviors decreased as expected with one item showing no change. Thirty-six percent of the items had 2-6% increases with results from one item inconclusive. This particular set of data shows the fallability of putting items into arbitrary divisions of positive and negative behaviors. It also points out the poor quality of this particular instrument as far as it's ability to generate clear, valid data.

FEELINGS TOWARD SCHOOL,LEARNING, AND NEW TECHNIQUES

Interviews. I conducted three audio taped interviews with each child during the project. The questions used are in Appendix D. An initial interview was held the week before I started the project. The second interview occurred half way through the project with the final interview taking place the last week of the project. My hope during these interviews was to see if the children could identify and verbalize any differences they saw in themselves as learners, and how they felt about school in general. After transcribing the tapes I then divided the interview questions into the three broad categories of learning, teaching techniques, and school, and analyzed the children's responses looking for changes over time.

The first category I looked at was learning. Eighty-one percent of the children said the way they learned was fine or good while 19% indicated that learning was hard sometimes. I found this interesting since these were all L.D. children who were experiencing problems in learning and were behind their

peers in academic achievement. In addition only 36% said yes when they were asked if they remembered what they learned while 54% said sometimes they did. One child reported not remembering much at all.

They were then asked if learning was fun for them. Answers were almost equally divided between yes and no. In the second and third interviews however, 100% of the children answer yes to both "Is learning more fun for you now?" and "Is this helping you remember and learn?" One child commented that "The other teachers lecture and it's boring, but this is fun." Another comment made was "I think it's probably better for me than the rest of the classes I've been in." There were many encouraging comments made about the way this project helped them learn and remember. Many talked, for example, about getting better grades and not needing to practice as long and gave specific examples of classes the techniques have helped them improve in. Some comments made were "It helps me think", "Makes me read faster", and "I thought it was boring until I tried it and it helped." One boy, when asked how he knew these techniques had helped him, said "Because I can remember my work now." Only one child reported feeling these activities had been a waste of time.

I then looked at questions dealing with the manner in which they were being taught, the techniques themselves, and the children's use of them. Although in all interviews they said they liked the way they were taught in the L.D. room better than in their regular education rooms, there was a definite change in the degree of their enjoyment once the new techniques were intro-

duced. I noted they made comments during the 2nd and 3rd interviews such as "This room- it feels pretty good," "This way better," and "We do better stuff in here than in the other room." One child sums it up best by his statement: "It was harder when we didn't do those things...before it was too hard - now it's easy."

When asked how they felt abaout the specific techniques we were doing, 50% of the responses talked about the activities being fun and how they enjoyed them. Five children remarked how the activities helped them in school. One boy said he didn't know how he felt while one girl said "Some of them (activities) were dumb, but some of them weren't." Only two children felt they needed more time to practice the new techniques before using them. Seventy-two percent of the children wanted to learn a greater number of techniques than they presently knew. Sixty-one percent of the children responding used these techniques on their own while 38% said they only did them when asked to by the teacher. Favorite techniques listed by the children were fingerpainting with various mediums; air writing; typewriting; relaxation and imagery. Least favorite techniques were backwriting and tracing words on the board with water and a paintbrush. Two children said they liked all of them while relaxation, color shock and intuitive reading were each mentioned once as being least favorites.

The child who, during the second interview, had said the activities were a waste of time while talking about his use of intuitive reading said he "Didn't have to think about what the words are- you just say them." Another boy, when talking about how using color shock helped him said he could remember the color of

the letters of the words he was studying. Finally two children made specific mention of how the relaxation techniques we used helped their muscles and bodies to relax thereby enabling their minds to picture their work and remember it.

In the first interview I asked the children what their biggest problem was in school. Thirty-two percent of the children identified spelling; 24% math; 16% reading and 8% each English, social studies and music. During the following two interviews I asked how things were now going for them in school. Responses were equally split between fine/good and better than before. Examples of statements given are: "At the beginning I was getting F's, C's, and D's and now I'm getting A's and B's"; "It helped in spelling cuz I had a B and then it turned into an A"; "It's a lot different (better) than before"; and "Better in all subjects."

The first set of interviews were very short with mostly one word answers. A typical first interview response to the question "How do you feel about how you learn?" was "Fine." When asked to elaborate, many just sat and stared. They were clearly not used to thinking about themselves, were uncomfortable with reflective questions. I often felt during these initial interviews that students resorted to answers they thought I wanted to hear. The subsequent two interviews saw enormous changes in their answers. Responses were often a few sentences in length describing their feelings about doing the techniques ("Embarassed that someone would see me"; "They're easy and I like doing them") or their descriptions of how these things were helping them ("When I'd practice for homework or spelling, I'd use these and they help

me"). The children were at ease and had some insightful answers to how they felt about things.

Parent Surveys. A survey was mailed to parents at the beginning and end of the project (See Appendix E). I hoped that the questions would touch on the child's feelings and self-concepts regarding academic and extracurricular activities as well as friendships. I also asked about both the parents' and child's feelings about the L.D. program, their academic progress, and school in general. By sending the surveys twice, I was looking for any changes in feelings or perceptions that might have occurred due to the project. In reporting the results, the numbers of respondents change due to the fact that each item was not always answered by everyone.

In the first survey's questions dealing with the child's self-concept in academic areas, parents of seven out of eight children reported their child feeling happy, good about themselves, being secure, and having a positive outlook on life. Only one child was reported as having low self-esteem. On the follow-up survey, seven out of nine parents once again reported that their child feels confident and generally good about her/himself.

One parent who previously reported a positive outlook in her/his child was unsure of peer feelings of acceptance in the post-project survey. The only negative respondent in the first survey happily reported that her/his child's confidence was getting better.

In the first survey's questions dealing with the child's

feelings about extracurricular activities and friends, nine out of ten parents reported their child's feelings in positive terms. They talked about the children feeling good, confident, loving sports and valuing friendships. One parent said her/his child does not have friends and spends free time alone.

The second survey showed seven of the ten still feeling good about their child's friends and activities. The child reported to have no friends was still described as a loner. Two previously positive respondents reported that their children seemed a little unsure of themselves, had only one friend, and did not take part in many extracurricular activities.

In talking about the L.D. program, all eight parent responses in both the first and second surveys expressed very positive feelings. These feelings fell into three categories: the concept of the program; the teacher herself; and the benefits for their children. Parents stated that L.D. is a "great program" and that they are very "happy and glad my child's in it." Most responses about the teacher are best reflected by one parent's statement that they "feel priviledged to have a teacher like Mrs. Grevenow." Student benefits that were mentioned by the parents were that the L.D. program is a "positive experience", "it's helped my child gain confidence ", and "instills positive thinking."

Regarding their children's feelings about being in L.D., eight out of ten parents in the first survey responded positively. Their children felt very good about it, they felt safe, and had the best teacher. One child was reported to feel that L.D. was too easy, and another was said to feel terrible in all areas in L.D.

In the follow-up survey, parents showed all but one child reacting positively and talked about their children's good attitudes toward the teacher and class with one child actually starting to realize the helpfulness of L.D. The child who earlier felt terrible in all areas now did not mind L.D. Only one child, according to the second survey, reported did not want to be in L.D.

On the first survey, when asked how their child felt about school in general, eight out of ten parents responded with phrases like "enjoys school", "good attitude", and "loves school." The two negative feelings were that school was "somewhat fair" and "terrible in all areas." In talking about learning in general, parents reported a majority of their children responding positively. Some were not so sure of learning and responded with statements such as "wishes could learn faster," "tries but frustrated easily," and "wants to know why he has to learn it." When the children were asked about themselves specifically and their ability to learn, six out of nine parent responses were negative. Statements such as "gets down on self," "wishes could do better," and "feels unable to learn, stupid" were the norm.

On the second survey eight out of nine parents said their children responded positively when asked about school. One of the previous negative respondents did not answer while the second's child still disliked school "very much." When asked for specific phrases their child used to talk about school, parents responded with "excited," "very positive," and "always says good things." Two negative responses were "boring" and "can't stand it." One parent mentioned their child is not as negative as s/he

was in the beginning and now seems to enjoy school. Another parent said their child does not say much about school unless s/he feels s/he's being treated unfairly. The area of how the child feels about her/himself specifically and her/his ability to learn saw a big change over time. On the follow-up survey eight of the nine responses were positive. The parents now reported with comments such as "she feels fine," "self confidence has improved," "great," and "seems to like school." Only one parent reported a child still feeling "poorly about self."

Parents reported negative feelings when asked if their child showed frustration when trying to learn. Nine of the eleven initial responses identified frustration while on the follow-up survey, only four of the eleven responded that way.

A change was also seen in the amount of weekly homework the parent needed to help the child with. At the beginning of the survey, those who responded with a specific amount of time averaged 2.3 hours spent on homework each week. By the end of the project this average had dropped to 1.6 hours of weekly assistance given. One parent who first told of the need to help with homework all the time now said that lately they had not needed to help much at all.

First survey results on feelings about academic progress showed seven out of eleven parents very pleased with the progress their child was making. Four parents expressed concerns ranging from fair progress and "wish it were more" to slow progress. One parent mentioned needing to pressure their child to perform. Seven out of ten parents responded that their child felt positively

about their progress and used phrases such as "right now excited," "proud of self," "happy and feel independent," and "feel good about it." Negative answers reflected their child's feelings of "wanting to do better," "being upset they're behind," and "rarely feeling good about himself."

Eight of nine parents responding to the second survey expressed pleasure with their child's progress. Examples of their comments were "Has improved greatly these last few quarters," "Much better than ever expected," and "Very well- it's getting easier." Only one respondent talked about still needing to pressure her/his child to perform. In regards to their child's academic progress, the parents responses were similar to the first survey where most of them felt positive. Three parents, whose children previously felt negative about themselves, now reported improved feelings that seemed to reflect that grades in specific classes should be better instead of a deficiency in the children themselves.

Children's Journals. In order to find out the children's attitudes about the techniques, students answered eight yes/no questions in their journal notebooks following the introduction of each new technique. They also were encouraged to add any comments or feelings they had about the techniques, though few of them took the time to do this (See Appendix F). Shortly after starting this though, I decided to eliminate item 7, "It didn't help at all," because the children were uncertain how to answer it. I made a comprehensive list of all activities and organized them according to the dates they were first introduced to

the children. The number of children responding to a particular activity varied because not all children were in the same class in order to do the techniques. I then assigned one point to "yes" answers and two points to "no" answers and determined overall averages for each response. This information was then charted to facilitate analysis, especially when looking for changes over time.

The first thing I looked for was a positive change in answers over time. All item averages moved in the direction expected. One item, "I felt silly doing it," showed the greatest positive change indicating that over time, the children become less self-conscious and more comfortable trying out different ways of learning. I assumed that as their self-confidence increased and they started to believe in their ability to learn, they would be more willing and comfortable experimenting with the unique ways of learning. Their answers to this item back up my assumptions.

I also noticed a pattern emerging that I had seen in the data on classroom observations and in talking with the children about their most and least favorite techniques. Activities that were used around the time period of Weeks 4-7 and Week 14 had the most obviously successful activities as noted in the children's journals. These were the same weeks in the classroom observations that saw high increases in positive behaviors. The activities during these weeks were also the ones mentioned in the interviews as their favorite techniques.

Children's Questionnaires. Each child filled out three different questionnaires at four separate times during the project. They were completed in Weeks 1, 5, 10, and 15. The questionnaires dealt with the child's feelings about school, learning, and themselves. One questionnaire (See Appendix G) was a composite of items that dealt with school, learning and self-esteem taken from an inventory written by Stanley Coopersmith (Coopersmith,1967). Another questionnaire (See Appendix H) was a formalized instrument, the Piers-Harris Children's Self Concept Scale. All of these questions dealt with self-concept. The third questionnaire (See Appendix I) was teacher constructed and dealt with school and learning items that I felt were important but not included in the other two questionnaires. My purpose for giving the questionnaires several times was to see if there was any noticeable change in these areas during the project.

After compiling group scores for each item I then grouped all the questions dealing with school from the teacher constructed and Coopersmith surveys together. I did the same for the categories of learning and self. I left the Piers-Harris intact and simply looked at overall scores for each collection since the entire questionnaire dealt with self.

Looking at the items dealing with learning, I noticed that 50% of the items showed positive changes over the course of the project. No change was seen in 31% of the items. The item that dealt with the child "likes to learn things at school" had a 23% increase in the number of children who answered yes. A 35% increase was seen in the number of children who felt "it's easy

for me to learn." The number of children who were "proud of their school work" increased by 20% while a 25% decline was seen in the number of students who said they had a hard time concentrating. Eighteen percent of the items changed in a negative way but these changes were very minor.

Items talking about school dealt with things such as feeling good and comfortable with school, being interested or bored in school, and being discouraged with school and achievement. Seventy percent of the responses to these items changed in a positive way during the project, while 20% stayed the same. The one item reflecting negatively changed responses was "I'm not doing as well as I'd like to" and this feeling increased by 10%, reflecting the fact that they still wish their achievement was higher in school. "I'm interested in school," "I'm bored with school," and "I'm often upset in school" are the items that showed the biggest positive gains.

Sixty-four percent of the self-concept items from the teacher constructed survey and the Coopersmith questionnaire showed changed responses in a positive direction with four items showing dramatic increases. "If I have something to say I usually say it" increased by 30%. Feelings of "It's pretty tough to be me," "I really don't like being a boy or girl," and "I'm not as nice looking as most people" declined by 54%, 36%, and 36% respectively. One other category, "I'm never unhappy," had 45% more children responding it was unlike them. On a superficial basis, it might look like this is undesireable. But I feel that it reflects a more realistic evaluation of themselves, given the fact that no

one is happy all the time. Therefore, I consider this to be a positive change.

The Piers-Harris Self Concept Scale was given to measure the children's self-concept in a more formal, standardized way than the informal surveys previously mentioned. Since this item was norm referenced, I could formally compare my children's results with an established scale. Scores considered in the average range are from 46 to 60. Improvement in self-concept is indicated by a higher score than previously received. A group average was tabulated for each of the four times this questionnaire was distributed. The scores are as follows: 58.7; 63.8; 65.2; and 65.7. It's interesting to note that the initial score of 58.7 is already near the ceiling of 60 which is considered excellent for "normal" children. The final score of 65 exceeds what is normally considered an average self-concept score. The children moved from the 63rd percentile to the 82nd percentile and from the 6th to the 7th stanine by the end of the project. Problems perceived by the children seemed to center around the areas of their intellect and behavior. In most cases, these two areas showed improvement in individual questionnaires over the duration of the project.

Summary: Feelings. In progressing through three interviews, the children grew in their ability to analyze themselves in regards to school and learning and were able to give realistic evaluations of their feelings. Fifty percent increases were seen in their enjoyment of learning with 100% responding positively by the end of the project. The children were able to identify specific areas of school where their achievement increased and many

times were able to explain what techniques had helped them. A majority (61%) reported using some of the activities on their own when studying and most of them (72%) wanted to learn more techniques. All of the children felt very positive about their performance in school by the end of the project and seemed to feel they had benefitted from these different teaching techniques.

Results from the parent surveys showed 82% of the children were seen as having good self-concepts in regards to their confidence in learning. Eighty percent of the parents viewed their children in a positive light concerning friends and extracurricular activities while 100% of the parents in both surveys expressed positive feelings about the L.D. program. Their comments dealt with the concept of the program, the teacher, and the benefits for their children. Eighty percent of the parents in the first survey and 91% in the second survey indicated that their child felt good about the program and teacher and reported feeling safe. A 21% increase was seen in the parents' feeling good about their child's academic progress with comments made that dealt with improvements seen over the course of the project. Parents indicated that 70% of their children responded positively to their progress at the start of the project. The second survey showed change in that the few negative responses previously given were not as negative as before with the emphasis shifting from seeing a deficiency in themselves to wanting better grades in a specific class. An 8% increase was seen in positive reactions to school in general. When focus was narrowed to how they felt about their own learning ability, a 22% increase in positive feelings was noticed over the

course of the project with many stating an increase of confidence. The biggest positive increases seen dealt with the children feeling frustrated in their attempt to learn. While 81% responded they were frustrated on the first survey, only 36% felt that way at the end of the program. This change in frustration with their learning is also reflected in the 31% decrease in the amount of time parents needed to help with the child's homework.

The children's answers in their journal to questions about the specific techniques they were using all showed growth in the expected direction. This indicated that they were comfortable trying learning techniques very different from the ones they were used to. Their answers reflected the fact that they felt the new techniques helped them understand their schoolwork better and made learning easier for them. Their journals also supported previous data that showed Weeks 4-7 and Week 14 were exceptionally successful weeks and that the instruction during those weeks utilized some of their favorite learning techniques.

In the children's questionnaires, responses to 50% of the learning items, 70% of the school items, and 64% of the self-concept items improved over the course of the project. Examples of items where big improvements were seen are feeling it is easier to learn and concentrate, being interested in school and learning, and being satisfied with themselves. The Piers-Harris Self Concept Scale scores showed an increase in group averages of seven points, putting the group in the above average rating for self-concept. Areas that showed noticeable improvements in the individual questionnaires were on items dealing with intellect and

behavior. While a few answers to questions were undesirable, these changes were not at a significant level.

TEACHER INVOLVEMENT

Teacher Journal. My final set of data came in the form of a teacher journal. I had two reasons for keeping a journal during this project. I wanted to record my implementation of the techniques themselves and their effects on the children in the room. I also wanted to record the effects this project had on my feelings and style of teaching.

Initially, I wrote in my journal at the end of the day. I tried to recap what had happened and the reactions of the children and myself to the various techniques as I introduced them. After a few weeks, I realized I was not getting a complete enough description of what went on. Therefore, I decided to keep the journal next to me as I taught and write in it throughout the day. In this manner I was able to immediately record reactions and feelings as they happened. This gave me a much more detailed and accurate accounting of what was going on during the project.

When analyzing my journal data, I coded the material into the two groupings, previously mentioned as techniques and children, and my feelings about the project. I dealt with each category separately as I recorded my entries in a week by week manner throughout my journal. When this was done, I reduced this material into main ideas I saw developing throughout the project.

The Techniques and Children. When I first started introducing the techniques to the children, I encountered a lot

of resistance and some embarassment over what I was asking them to do. Some of these techniques (e.g., relaxation and imagery) were very different from their typical experiences in the classroom and at times they looked at me as if I were crazy. The spelling technique used during the first week of the project (color shock) produced excellent grades, with one child passing his first test since September. This dramatic success during my first week helped tremendously with convincing the children to give these techniques a try. I could point back to the first week's grades and "prove" to them these techniques could truly help them.

Their initial reservations about what I was doing slowly gave way to a willingness and enthusiasm to use the techniques that surprised even me. During our breather week (first week in April) when I was not using any techniques, it was my worst complainers who kept asking when we were going to do our relaxation and imagery sessions. Around the start of Week 4, I noticed children started to remark how they thought these techniques were helping them and they actually started to use these techniques on their own without any direction from me.

Two of my most rewarding moments during this project came from comments made by a parent and another teacher not involved with the program. During Week 3 a parent remarked how excited her three children were about the new things we were doing in class and that they were using them at home to study. They also told her how much better thay thought they were doing in their classes. Halfway through the project I was approached by another

teacher who said she observed a girl, who came to me for reading, doing some of the visualization exercises during a spelling test. She said the girl passed her first test that year and was sure it was due to the techniques I had been using in class.

As I progressed through my journal, I noted that comments were made about some techniques working especially well with the children (e.g., color shock, typing) while others were of questionable value (e.g., tracing beaded letters, configuration boxes). I also wrote about how a specific technique like intuitive reading worked very well with some children and not with others.

Most of the spelling techniques worked very well with all children as noted by the constant entries in my journal about great test scores. In addition to most of the spelling techniques, a few other techniques seemed to benefit everyone. These were the relaxation and imagery sessions, semantic mapping, cartooning, and typing. These activities are the ones that most easily transferred to other classroom activities and were the easiest to find practical applications for.

Marching before oral reading, intuitive reading, the whole word approach and backwriting were four techniques that greatly helped some of the children while hindering progress with others. For example, I noticed that intuitive reading helped the most with my strongest right brain-oriented children. Conversely, it greatly interferred with my strongest left brain-oriented learners (See Appendix J).

A few spelling techniques such as missing letters in words, configuration boxes, flashlight tracing of words and tracing words

with water and paintbrush seemed to benefit no one and were often mentioned in my journal as their least favorite technique to do.

The techniques mentioned most frequently in my journal were the relaxation and imagery training sessions. Starting during Week 5 these techniques were used daily with the children. I found them to be the most unique and exciting of the techniques I tried. The children had trouble, initially, with being able to relax and visualize the scenes from each session. As we progressed through the project with daily exercises in relaxation and imagery (See Appendix K), the children slowly increased in their ability to produce mental images. From the start, the younger children were much better at imagery and were much less inhibited than the older children in talking about their visualizations. The younger children's enjoyment in doing these sessions was obvious in the way they rushed to get their places on the rug and by the way they were often seen laughing over the images in their mind. Even though the older children took much longer to adjust to visualizing, they too, were finally able to describe creative and unique analogies. Many times I was left speechless by the vivid descriptions the children gave. Once, for example, when asked what the foam in the sea would be made of if the sea was made up of teachers, the students gave answers such as hair, books and papers. Another time, after a session about being an insect on the floor of the forest looking up, a child who rarely contributed went into a very detailed description of what he saw. He described feeling the bark of the trees and the wet, mossy smell of the forest. He talked as if he really were that insect.

I also could see transfer from our training sessions to using visualization during spelling tests and various reading activities. This transfer was dramatically portrayed with my breakthrough in teaching one severely disabled child to read. She had not been able to remember any of her reading vocabulary words and consequently struggled unsuccessfully through decoding strategies with every word she encountered. Through our imagery training, she learned to visualize her favorite color and retain that image as she read (intuitive reading technique). This enabled her to finally tap into her right brain where her vocabulary has been stored all these years. She merely needed an avenue through which to retrieve what she knew. Slowly, over the period of the project, she began to read.

I noted in my journal that imagery lessons which dealt with tactile feelings or emotions lent themselves to especially vivid images and were the easiest type of visualization for the children to do. The children showed their easiness with these activities by readily changing their images as needed. One child, when asked to imagine himself being flat as a pancake, was unable to visualize it. So he imagined himself running into a brick wall and then he was able to see himself flattened out. The children were also able to handle disturbing images that I think adults would have trouble with (fire crackers exploding inside themselves). I interpreted this as "proof of their ever increasing ability to visualize and feel comfortable with it."

Finally, several children were consistently mentioned in my journal. Two of them who were often mentioned as having difficulty

with these techniques were strong sequential learners. This I take as further evidence that these techniques do tap into right brain abilities.

But the most exciting notations came towards the end of the project and dealt with the most negative, underachieving child in my classroom. I saw a wonderful shift in his attitude toward school and in his feelings about himself. This student started out as a child who complained about everything, refused to do assignments or attend to instruction, and was constantly negative about himself.

By the end of the project, he was asking to learn more techniques, was upset when we could not do a relaxation session, was on time with all assignments and for once was passing every subject. He had stopped complaining and now spent a lot of time smiling in class and talking about how these techniques really helped him learn. The transformation in this child alone made all the work worthwhile.

My Feelings on the Project and my Role. My early journal entries are full of concerns about the quality of the project, my nervousness toward successfully implementing it, and my fears of not getting good data. I talked about feeling the "need to keep discovering more techniques for fear of missing out on one that could benefit my children." These initial fears eventually gave way to feelings of enthusiasm about the project and statements of how I knew these techniques were valid and helped my class. A lot of my enthusiastic feelings were based on comments made by the children, watching their reactions to

the techniques, and a general feeling I got from my classes. I also felt better about the fact that by the time the project ended I would have many alternatives to fall back on when more traditional methods did not work.

I made special mention of some techniques that I found boring to do as a teacher. These were usually the techniques where I needed to repeat a sequence over and over to the many different grade levels in my room (e.g., air writing and whole word approach). I recorded doubts about the effectiveness of a few techniques that later, according to some of my other data, appeared to be of limited or no value and not well received by the children.

In analyzing my feelings during the project, I noted some weeks when I felt the project was a chore to do and other weeks when I was truly excited and greatly enjoyed what was happening. The negative fluctuations in my emotions were often related to outside influences over which I had no control. Two of these major areas of concern that appeared routinely throughout my journal entries were being frustrated over time limitations and feeling tired and overwhelmed from the demands of the project.

Too little time is a typical problem in most L.D. classrooms. My district's method of structuring the L.D. program interferes with having adequate time to devote to any one area with seven grade levels (Kdg.- 6th grade) and four subject areas to contend with in each grade. I feel forced into a "production line" type of teaching. Therefore my normally hectic day of teaching was strained even more when time needed to be taken to introduce and teach new ways of learning. Even though these techniques

were very useful in terms of academic growth, my core curriculum still needed to be completed by year's end. When 30-45 minutes were taken for relaxation and imagery training, for example, it was time taken out of our formal reading instruction. Thus, the pressure was always on to complete the designated school curriculum while teaching alternative learning techniques to my students.

Due to these demands, I also made constant mention of feeling overwhelmed and tired from trying to stay on top of the project. I was trying to do too much and the new techniques kept me constantly on my toes. Teaching the actual techniques was not hard; It was the data collection that I found so time consuming. Every free moment was taken up in recording data. While I felt it vital to get good data so I could convince others that what I was doing truly helped, my data collection efforts put a lot of pressure on me as I progressed through the project. At the end of the project, I was greatly relieved to have the formal data collection finished. In the future I will be able to do these techniques and enjoy them without feeling pressured to "prove" their usefulness.

I found two of the techniques especially enjoyable. One was the playing of 4/4 time music during the children's worktime. I found this technique to be relaxing and it helped relieve some of the stresses I was feeling. I think the children reacted positively to it also since, according to my anecdotal records, we seemed to have much calmer weeks in the classroom when I played the music. The other activity I enjoyed was doing visualization

exercises in class. The children greatly enjoyed them, and we saw practical transfer of these abilities to academic areas. I could visably see improvements in the children's ability to image. As I described earlier, these children gave remarkable descriptions of their ideas and visualizations. Their ability to creatively describe things was an aspect of them I had not seen before. Previously, any type of descriptive or creative writing activities always yielded very unimaginative, common ideas. But through visualization training, my students were finally able to tap into and express their creativity. I got to see a whole new side of these children I am sure I would never have known was there if they had not been given this opportunity to visualize.

Telling other teachers about my successes was an aspect I mentioned several times in my journal. Halfway through the project my support teacher had me write up what I was doing for our L.D. newsletter (See Appendix L). I also found myself telling people about techniques I tried whenever I heard them talking about problem areas in their classes. A few times, comments were jokingly made about my relaxation sessions, and I found myself feeling very defensive about what I was doing. I felt like a TV preacher at times, trying to convert others to this new way of thinking and teaching. I have turned into a real proponent of these techniques and I put a plug in for them whenever I get a chance.

As far as changing my style of teaching, I found this to be a very difficult thing to do. Although a few of the techniques did eventually become so automatic I did not realize when I was using

them (e.g., asking them to visualize scenes or words in their minds), for the most part, I do not feel that the 15 weeks of the project were enough time to truly convert my style. I was a very left brain-oriented person and I felt it was a constant battle to catch myself reverting back to my old style of teaching. The children, too, even though they knew they learned easier with the new techniques, were not automatically using them. I am sure it will take longer than 15 weeks to change a pattern of learning or teaching that has been going on for years. I do think that in the future, as these children leave my classroom, they will remember and use some of the techniques on their own. As for me, I will continue to catch myself and make a conscious effort to include these right brain techniques in my teaching wherever possible.

Finally, I would like to make mention of an interesting entry I made during Week 10 of the project. Throughout all of my data, Week 10 was consistently the worst week as far as achievement, behaviors, and attitudes go. I noted a lot of references to misbehaviors throughout the week. Week 10 was the week before parent/teacher conferences and Easter vacation and these upcoming events could have been setting them off. Week 10 was also the end of April when, based on my experience, L.D. students usually quit working for the year. I felt these factors might collectively have been contributing to the things I was seeing.

But then I came across something interesting in my journal. Throughout my teaching career, I have always taken the responsibility for the children's achievement. I felt that if they were not progressing, it must be my fault. Perhaps I had not found

the correct method yet? Perhaps I needed to learn more? I would find a host of other reasons why the child was not learning. Even when I would get fed up and say "I give up, it's not my fault," I never meant it deep down and I would continue to beat myself up about it.

But during Week 10, I saw a true shift in my attitude about what my role as a teacher was. I started to see my role as a facilitator, enabling students to help and teach themselves. I started to shift the responsibility for their learning off of myself and on to them. I started to really believe that this was where the responsibility should be. I felt by Week 10 that I had now given students all the skills, techniques, and resources they needed to achieve and that now it was their choice, not mine. Week 10 was the point at which I felt I could now let go without guilt and began to feel more confident in my ability as a teacher. I also believe that as they felt better about themselves, the students would now be more willing to accept that responsibility. I saw this project as having helped all of us move in a positive direction.

Perhaps the children's sudden misbehavior during Week 10 was an unconscious reaction to my attitude shift and an initial rebellion against taking on true responsibility for themselves. I am sure an attitude shift of this kind was reflected in my actions toward them and this was their way of handling it.

Summary: Teacher Involvement. Initial student resistance and embarassment over doing the techniques eventually gave way to their enthusiasm and belief that the techniques truly helped.

I was fortunate that some of the first techniques introduced produced excellent academic growth, which helped convince the children of their benefit much earlier than I expected. It was also rewarding to see not only the children, but other teachers and parents noticing positive results from the project.

Not all the techniques worked equally well with everyone, and some of them had no observable benefit at all. The techniques worked best with my strongest right brained learners, which was to be expected. One technique that seemed to benefit everyone to some degree was the relaxation and imagery training. The children and I both found these sessions interesting, beneficial, and practically applicable to academic areas. I was often surprised at their creativity and excited to find an activity that helped them tap into their imaginations. I was able to see a big change in several children's attitudes towards themselves and their ability to learn as we progressed through the project. I saw these several students developing better self-concepts and really enjoying their school activities. One child made such a dramatic turnaround that he seemed like a totally different child by the end of the project. Being able to see such positive changes in the children made all the hard work to conduct this project worthwhile.

Changes were not only seen in the children, but in myself also. Initial nervousness and fear of the project decreased over time and I became an enthusiastic proponent of the techniques I was using. I had my emotional ups and downs throughout the project with many of my negative feelings resulting from time

limitations and my feeling overwhelmed by the magnitude of the job I was trying to do. Implementing this project increased demands on my already hectic day and added to the pressure I was feeling. I found data collection to be especially time consuming and a big contributor to my overwhelmed feeling.

Regardless of some negative feelings, I greatly enjoyed doing this project and found great satisfaction in a lot of the activities we did in class. I could actually see the improved abilities in many of the children in my class and I believe they recognized their growth as well.

As the project progressed, I felt very strongly about defending my use of these techniques in the classroom. I tried to convince others to try them in their rooms and attempted to convert other teachers every chance I got.

Converting my teaching style after 13 years proved very difficult to do and it took a conscious effort on my part to keep from slipping back into old habits. Neither the children nor I were using many of the techniques at an automatic level even though we both recognized the benefits of doing so. It will take a lot longer than 15 weeks to change a way of learning and teaching after so many years. But I have confidence that we will be able to do so.

Finally, my journal gave some insights into what might have caused Week 10 to be so infamous during this project. Besides it being a bad time of year, another interesting fact was noted: I made a major shift in my attitude toward teaching during Week 10 that may have contributed to the poor performance during that

week. The increase in negative behaviors may have been a type of rebellion to my feeling that the responsibility to learn was theirs.

CONCLUSION

The techniques used throughout this project definitely improved the academic growth, positive attitudes, and classroom behaviors of the children in my class. Although my attempts to determine academic growth on a daily basis proved inconclusive, overall progress in achievement was seen when looking at pre- and post-achievement test scores. There was a 90% reduction in negative behaviors and a 60% increase in positive behaviors observed in the classroom over the 15 week period. According to data from my behavior rating form, positive behaviors increased by 85% while negative behaviors decreased by 36%. Negative behavior results may have decreased by an even bigger percentage, however, since the ability of some of those items to give me valid data was questioned.

Interview results showed that the children felt very positive about their school performance and viewed the techniques as responsible for their improvement. The interview data showed children's self-concepts, confidence in their academic abilities, and feelings toward school in general. The greatest change was a 45% decrease in the number of children who felt frustrated in their attempts to learn. Questionnaire results revealed a 50% improvement in learning items, a 64% increase in self-concept,

and a 70% improvement in dealing with school related items. The biggest improvements revealed in the questionnaire data included the children (1) feeling that learning was easier, (2) being interested in school and learning, and (3) being satisfied with themselves. Formal measures of self-concept showed the greatest improvements made in items dealing with their intellect and behavior.

The combination of these project results obviously signal a big change in the individual children, our classroom atmosphere, and in how the children performed in academic areas. Although not every technique was greatly beneficial, overall the project was a great success. The children became as enthusiastic as I was in using these techniques and were disappointed when circumstances interferred with our use of them.

Changes were not only seen in the children, but in myself as well. Although I often felt rushed and overwhelmed, I experienced a great deal of satisfaction in watching the positive changes in the children. I found myself trying to convince other teachers to try these techniques and was always ready to defend my use of them. I found it more difficult to change my style of teaching than I had anticipated. Employing the techniques themselves was not hard but keeping myself from slipping back into old habits was a constant battle. Now that the formal aspect of the project is over, I feel I can reintroduce these techniques at a much slower pace. I would use one technique for quite awhile before dealing with another. In that manner, I

think I would be more successful with permanently changing my style of teaching.

I certainly feel that these techniques are a viable method of teaching for any classroom. By introducing a balance of right and left brain teaching techniques, all children would benefit. I look forward to distributing copies of these techniques to members of my staff and encouraging them to try some. A handout containing lists of these techniques would give both regular and special education teachers a broader base of techniques to choose from and may eliminate some of the problems they have in their classrooms. For example, simply having the children write their spelling words vertically or in color could bring surprising improvements on their weekly test scores. Many of the techniques are a welcome change from traditional methods and can serve as a way to renew excitement in both teaching and learning.

Perhaps the biggest benefit I received from doing this project (aside from a happier, more productive classroom) was a clarification, in my mind, of my role as a teacher. I came to the realization that both teacher and child need to work as a team in order to truly succeed. We <u>both</u> have responsibilities to live up to in order for things to work. My responsibility is to make every opportunity available for the children to succeed. These techniques have helped me do this. The children's responsibility is to make use of these opportunities and resources in order to learn. No one can force them to learn. It is something they have to want to do.

Finally, I think the success of this project can best be summarized by a statement I made in my journal on the last day of the project. I noted an easiness in my classroom now, "a laughter and opening up with each other that, while there before, has been greatly enhanced by this project." I encourage others to give it a try.

APPENDICES

Observation Schedule

Week 5

Mon - Delta rd Jenny sp Shane sp
Tues - Tori rd Scott eng.
Wed - Dave rd. Jesse eng.
Thurs - Ty sp. Erik sp
Fri - Paul rd Jessie sp.

Week 6

Mon - Paul rd Dave sp. Ty engl
Tues - Delta rd Erik eng.
Wed - Tori rd Jesse rd.
Thurs - Shane rd. Scott rd.
Fri - Jessie eng Jenny eng.

Week 7

Mon - Dave rd. Jessie rd
Tues - Paul rd Erik rd
Wed - Delta rd Jesse sp Ty rd.
Thurs - Tori rd Scott eng.
Fri - Shane sp. Jenny rd

Week 8

Mon - Dave sp. Jessie rd.
Tues - Shane rd. Erik sp Ty sp.
Wed - Paul rd Jesse engl
Thurs - Delta rd Scott rd.
Fri - Tori rd. Jenny rd.

Week 1 – Master List

*=kid journal

Feb 1 Mon.

- parent survey mailed
- questionaire given
- interview Shane (11:15), Raul (11:30)
- observe - Ryan rd; Shane spl; Dave rd

Feb 2 - Tues.

- interview Dave (11:30), Jessie (11:45)
- observe - Jessie spl; Jenny spl
- * cursive writing exer. - Jesse (then do daily)

Feb. 3 - Wed.

- interview Toni (11:15); Ryan (9:45)
- observe - Raul rd; Erik rd
- * fraction exercise - Shane, Jessie

Feb. 4 - Thurs.

- interview Delta (11:15), Jesse (9:45)
- observe - Delta rd; Jesse spl.
- * fraction exer. - Shane, Jessie
- tape record reading class 10:30

Feb. 5 - Fri.

- interview Scott (9:45), Jenny (10:45), Erik (9:30)
- observe Toni rd, Scott spl.
- record grades
- * fraction exer. - Shane, Jessie
- * before spelling test - do relaxation exercise

Daily

* 1) actions coupled with vocabulary words
* 2) color block & vertical writing – spelling
* 3) loop b's and d's – Jen, Erik, Jesse, Scott, Ry
* 4) Jesse - cursive exer.
5) teacher journal

Schedule of Data Collection

(11)

Week 1
- questionnaires
- ach. test
- interviews (each child)
- parent survey
- tape record (1 class per week)
- observation of each child (varying days + pers.)
- grades
- Student journals
- anecdotal records (notes made daily)
- teacher journal

Week 2
- video record - 6 gr. rand.
- tape recording 1 class
- observation ea. child
- grades
- Student journals
- anecdotal records
- teacher journal

Week 3
- tape record 1 class
- observation ea. child
- grades
- Student journals
- anecdotal records
- teacher journal

Week 4
- tape record 1 class
- observation ea. child
- grades
- Student journal
- anecdotal records
- teacher journal

APPENDIX B

During Instruction

+ raises hand _____
+ gives answer _____
+ joins in _____
- fidgets _____
- daydreams _____
- talks off task _____
+ asks questions _____
+ looks interested _____
- looks confused _____
- disturbs others _____
+ attends to presentation _____
+ listens to others _____

During Seatwork

- fidgets _____
- daydreams _____
- talks off task _____
+ asks questions _____
+ looks interested _____
- looks confused _____
- disturbs others _____
- out of seat _____
+ works steadily at assign. _____
+ completes work on time _____
+ passing grade on work _____
+ tries before asking for help _____
+ works quietly _____
+ ignores distractions _____
+ discusses work with peers _____
+ cooperates with others _____

APPENDIX C

BEHAVIOR RATING FORM (BRF)

1. Does this child adapt easily to new situations, feel comfortable in new settings, enter easily into new activities?

   _____always _____usually _____sometimes _____seldom _____never

2. Does this child hesitate to express his opinions, as evidenced by extreme caution, failure to contribute, or a subdued manner in speaking situations?

   _____always _____usually _____sometimes _____seldom _____never

3. Does this child become upset by failures or other strong stresses as evidenced by such behaviors as pouting, whining, or withdrawing?

   _____always _____usually _____sometimes _____seldom _____never

4. How often is this child chosen for activities by his classmates? Is his companionship sought for and valued?

   _____always _____usually _____sometimes _____seldom _____never

5. Does this child become alarmed or frightened easily? Does he become very restless or jittery when procedures are changed, exams are scheduled or strange individuals are in the room?

   _____always _____usually _____sometimes _____seldom _____never

6. Does this child seek much support and reassurance from his peers or the teacher, as evidenced by seeking their nearness or frequent inquiries as to whether he is doing well?

   _____always _____usually _____sometimes _____seldom _____never

7. When this child is scolded or criticized, does he become either very aggressive or very sullen and withdrawn?

   _____always _____usually _____sometimes _____seldom _____never

8. Does this child deprecate his school work, grades, activities, and work products? Does he indicate he is not doing as well as expected?

   _____always _____usually _____sometimes _____seldom _____never

9. Does this child show confidence and assurance in his actions toward his teachers and classmates?

   _____always _____usually _____sometimes _____seldom _____never

10. To what extent does this child show a sense of self-esteem, self-respect, and appreciation of his own worthiness?

    _____very strong _____strong _____medium _____mild _____weak

11. Does this child publicly brag or boast about his exploits?

_____always _____usually _____sometimes _____seldom _____never

12. Does this child attempt to dominate or bully other children?

_____always _____usually _____sometimes _____seldom _____never

13. Does this child continually seek attention, as evidenced by such behaviors as speaking out of turn and making unnecessary noises?

_____always _____usually _____sometimes _____seldom _____never

APPENDIX D

INTERVIEW QUESTIONS

Use these for the initial interview

1. How do you feel about your ability to learn in school?
2. Explain how you feel about the way I teach you?
3. Is learning fun for you?
4. Are you able to remember what you learn?
5. Do you need more time to practice what's introduced in school?
6. What's your biggest problem in school?

Use these 2nd and 3rd interviews

1. How do you feel about the different things we've been doing in class?
2. Is it helping you remember and learn? How?
3. Do you use these techniques when working on your own?
4. Do I spend enough time teaching you how to do these techniques?
5. Do we need to practice them more?
6. Should I slow down, speed up... the number of techniques I'm teaching you?
7. Do they make learning more fun?
8. Which way of teaching do you like best?
9. How do you think things are going for you in school?

APPENDIX E

1. How does your child talk about school?

2. Does your child show frustration in learning? How?

3. How much time do you spend helping your child with homework?

4. How would you describe your child's attitude toward
   -school in general

   -LD classes

   -learning

5. How do you feel about your child's academic progress to date?

6. How does your child feel about his progress in school?

7. How do you feel about the L.D. program itself? Give pros and cons.

8. How would you describe the way your child feels about himself
   -in relation to school and learning

   -in relation to extracurricular activites and friends

   -in general; overall self-concept

APPENDIX F

QUESTIONS FOR CHILDREN'S JOURNALS

	YES	NO
1. I was able to do the exercise.		
2. I like the exercise we did.		
3. I felt comfortable with the exercise.		
4. I felt silly doing it.		
5. I could learn easier using this technique.		
6. This helped me understand the work.		
7. It didn't help at all.		
8. I will use this each time I need to.		

Likes

Dislikes

Feelings

Please mark each statement in the following way:

If the statement describes how you usually feel, put a check (√) in the column, *"Like Me."*

If the statement does not describe how you usually feel, put a check (√) in the column *"Unlike Me."*

There are no right or wrong answers.

	Like Me	*Unlike Me*
1. I spend a lot of time daydreaming.	_____	_____
2. I'm pretty sure of myself.	_____	_____
3. I often wish I were someone else.	_____	_____
4. I'm easy to like.	_____	_____
5. My parents and I have a lot of fun together.	_____	_____
6. I never worry about anything.	_____	_____
7. I find it very hard to talk in front of the class.	_____	_____
8. I wish I were younger.	_____	_____
9. There are lots of things about myself I'd change if I could.	_____	_____
10. I can make up my mind without too much trouble.	_____	_____
11. I'm a lot of fun to be with.	_____	_____
12. I get upset easily at home.	_____	_____
13. I always do the right thing.	_____	_____
14. I'm proud of my school work.	_____	_____
15. Someone always has to tell me what to do.	_____	_____
16. It takes me a long time to get used to anything new.	_____	_____
17. I'm often sorry for the things I do.	_____	_____
18. I'm popular with kids my own age.	_____	_____
19. My parents usually consider my feelings.	_____	_____
20. I'm never unhappy.	_____	_____
21. I'm doing the best work that I can.	_____	_____
22. I give in very easily.	_____	_____
23. I can usually take care of myself.	_____	_____
24. I'm pretty happy.	_____	_____
25. I would rather play with children younger than me.	_____	_____

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	Like Me	*Unlike Me*
26. My parents expect too much of me.	_____	_____
27. I like everyone I know.	_____	_____
28. I like to be called on in class.	_____	_____
29. I understand myself.	_____	_____
30. It's pretty tough to be me.	_____	_____
31. Things are all mixed up in my life.	_____	_____
32. Kids usually follow my ideas.	_____	_____
33. No one pays much attention to me at home.	_____	_____
34. I never get scolded.	_____	_____
35. I'm not doing as well in school as I'd like to.	_____	_____
36. I can make up my mind and stick to it.	_____	_____
37. I really don't like being a boy—girl.	_____	_____
38. I have a low opinion of myself.	_____	_____
39. I don't like to be with other people.	_____	_____
40. There are many times when I'd like to leave home.	_____	_____
41. I'm never shy.	_____	_____
42. I often feel upset in school.	_____	_____
43. I often feel ashamed of myself.	_____	_____
44. I'm not as nice looking as most people.	_____	_____
45. If I have something to say, I usually say it.	_____	_____
46. Kids pick on me very often.	_____	_____
47. My parents understand me.	_____	_____
48. I always tell the truth.	_____	_____
49. My teacher makes me feel I'm not good enough.	_____	_____
50. I don't care what happens to me.	_____	_____
51. I'm a failure.	_____	_____
52. I get upset easily when I'm scolded.	_____	_____
53. Most people are better liked than I am.	_____	_____
54. I usually feel as if my parents are pushing me.	_____	_____
55. I always know what to say to people.	_____	_____
56. I often get discouraged in school.	_____	_____
57. Things usually don't bother me.	_____	_____
58. I can't be depended on.	_____	_____

APPENDIX H

Here are a set of statements. Some of them are true of you and so you will circle the *yes.* Some are not true of you and so you will circle the *no.* Answer *every* question even if some are hard to decide, but do *not* circle both *yes* and *no.* Remember, circle the *yes* if the statement is generally like you, or circle the *no* if the statement is generally not like you. There are no right or wrong answers. Only you can tell us how you feel about yourself, so we hope you will mark the way you really feel inside.

1. My classmates make fun of me..... yes no
2. I am a happy person..... yes no
3. It is hard for me to make friends..... yes no
4. I am often sad..... yes no
5. I am smart..... yes no
6. I am shy..... yes no
7. I get nervous when the teacher calls on me..... yes no
8. My looks bother me..... yes no
9. When I grow up, I will be an important person..... yes no
10. I get worried when we have tests in school..... yes no
11. I am unpopular..... yes no
12. I am well behaved in school..... yes no
13. It is usually my fault when something goes wrong..... yes no
14. I cause trouble to my family..... yes no
15. I am strong..... yes no
16. I have good ideas..... yes no
17. I am an important member of my family..... yes no
18. I usually want my own way..... yes no
19. I am good at making things with my hands..... yes no
20. I give up easily..... yes no

21. I am good in my school work ..... yes no
22. I do many bad things ..... yes no
23. I can draw well ..... yes no
24. I am good in music ..... yes no
25. I behave badly at home ..... yes no
26. I am slow in finishing my school work ..... yes no
27. I am an important member of my class ..... yes no
28. I am nervous ..... yes no
29. I have pretty eyes ..... yes no
30. I can give a good report in front of the class ..... yes no
31. In school I am a dreamer ..... yes no
32. I pick on my brother(s) and sister(s) ..... yes no
33. My friends like my ideas ..... yes no
34. I often get into trouble ..... yes no
35. I am obedient at home ..... yes no
36. I am lucky ..... yes no
37. I worry a lot ..... yes no
38. My parents expect too much of me ..... yes no
39. I like being the way I am ..... yes no
40. I feel left out of things ..... yes no

41. I have nice hair..... yes no

42. I often volunteer in school ..... yes no

43. I wish I were different ..... yes no

44. I sleep well at night..... yes no

45. I hate school..... yes no

46. I am among the last to be chosen for games..... yes no

47. I am sick a lot ..... yes no

48. I am often mean to other people..... yes no

49. My classmates in school think I have good ideas ..... yes no

50. I am unhappy ..... yes no

51. I have many friends ..... yes no

52. I am cheerful ..... yes no

53. I am dumb about most things ..... yes no

54. I am good looking ..... yes no

55. I have lots of pep..... yes no

56. I get into a lot of fights..... yes no

57. I am popular with boys..... yes no

58. People pick on me ..... yes no

59. My family is disappointed in me..... yes no

60. I have a pleasant face ..... yes no

61. When I try to make something, everything seems to go wrong. yes no

62. I am picked on at home ..... yes no

63. I am a leader in games and sports ..... yes no

64. I am clumsy ..... yes no

65. In games and sports, I watch instead of play ..... yes no

66. I forget what I learn ..... yes no

67. I am easy to get along with ..... yes no

68. I lose my temper easily ..... yes no

69. I am popular with girls ..... yes no

70. I am a good reader ..... yes no

71. I would rather work alone than with a group ..... yes no

72. I like my brother (sister) ..... yes no

73. I have a good figure ..... yes no

74. I am often afraid ..... yes no

75. I am always dropping or breaking things ..... yes no

76. I can be trusted ..... yes no

77. I am different from other people ..... yes no

78. I think bad thoughts ..... yes no

79. I cry easily ..... yes no

80. I am a good person ..... yes no

APPENDIX I

Yes No DK 1. I feel good about school.

Yes No DK 2. I like to learn things at school.

Yes No DK 3. School is a fun place to be.

Yes No DK 4. I understand what my teacher tries to teach me.

Yes No DK 5. I am bored with school.

Yes No DK 6. I complete what I begin.

Yes No DK 7. I feel like I'm slow at doing my schoolwork.

Yes No DK 8. I organize my schoolwork well.

Yes No DK 9. I ask the teacher for help more than others do.

Yes No DK 10. I have good study skills.

Yes No DK 11. It's easy for me to learn.

Yes No DK 12. I remember what I learn in school.

Yes No DK 13. I'm satisfied with my grades at school.

Yes No DK 14. I'm good in some subjects.

Yes No DK 15. I have a hard time concentrating.

Yes No DK 16. I feel uncomfortable in school.

Yes No DK 17. I'm afraid of failing.

Yes No DK 18. I'm interested in school.

Yes No DK 19. I like to read.

Yes No DK 20. Reading is easy.

Yes No DK 21. I like to do math.

Yes No DK 22. Math is easy.

Yes No DK 23. I like spelling.

Yes No DK 24. Spelling is easy.

Yes No DK 25. I like English.

Yes No DK 26. English is easy.

APPENDIX J

Besides formal tests such as the Kaufman Assessment Battery for Children that determine left or right processing preferences, this informal listing can be used as a guideline for right preference.

1. Appears to daydream.
2. Talks in phrases or leaves words out when talking.
3. Uses his fingers to count.
4. Has difficulty following directions.
5. Makes faces or uses other forms of non-verbal communication.
6. Displays fine motor problems (cutting, writing, or pasting) when asked to conform or do structured tasks.
7. Is able to recall places and events but has difficulty in recalling symbolic representation such as names, letters and numbers.
8. May have difficulty in phonics or decoding skills.
9. Is on the move most of the time.
10. Likes to work part-way out of his seat or standing up.
11. May exaggerate when retelling an event in which he has been involved.
12. Often has a messy desk.
13. Has difficulty completing his work on time.
14. Displays impulsive behavior.
15. Likes to touch, trip, and poke when relating to other children.
16. Will give the right answer to a question but will be unable to tell where it came from.
17. Will often give responses that are unrelated to what is being discussed.
18. May chew his tongue while working.

Not all right-hemispheric children will display all of the above characteristics.

APPENDIX K

THE ESCALATOR

We are now going to take an imaginary trip on an escalator. See yourself at your favorite department store. You are on the fourth floor now and you want to go all the way down to the basement. You step onto the escalator and feel the moving steps begin to carry you down. As you are moving downward, you feel yourself moving deeper and deeper into relaxation. The downward moving escalator just goes on and on, carrying you deeper and deeper into a place in your mind where pictures come alive and help you learn. (pause)

As the escalator reaches the third floor, you look around and see the people shopping in the store on that floor. Look carefully at all of those people. It's possible that you will be able to see your best friend among the shoppers. Yes, there your friend is—wave! You are happy to see your friend there. (pause)

The escalator is now moving to the second floor. As you move downward to this floor, you feel yourself being carried deeper and deeper into relaxation. From the escalator you can see out into the second floor where the toy department is. You can see bikes, your favorite games, stuffed animals, and many other toys you would enjoy playing with. (pause)

And now you take a step downward on the moving escalator, feeling yourself going downward, deeper and deeper into a relaxed, peaceful state of mind.

You are now reaching the first floor. As you look around, you see many beautiful clothes—beautiful dresses for girls and handsome shirts, pants, and coats for men. (pause)

Now you take another step down on the moving escalator and as you do so, you move toward a deeper, more comfortable area in your mind.

The escalator is now reaching the basement. As you look to the right, you see the bakery. It smells so good! Smell the cakes and cookies—ummmm—they smell great. You can even taste them. They just melt in your mouth. (pause)

On your left, you see the book department. There are many beautiful and colorful books for you to look at.

Feel yourself gliding down and down, further and further until you reach the end of the escalator trip. You step off the escalator now into a long hall. This long hall stretches away in front of you, and there at the end of the hall are doors, some open and some closed.

You choose one of the open doors and go inside. There you find a cheerful room with yellow painted walls. In the room you see a big, soft blue chair. It is waiting just for you. You sit in the chair and it feels so, so comfortable. (pause)

On the arm of the chair, you see a magic red button. You reach out with your hand and push that button. The chair goes back; you feel yourself going back, back with it. And as you do, you become totally and deeply relaxed.

(The students should now return to other activities, as before.)

Relaxation Session

T: You are now going to play the "Relaxing Game." Your eyes are closed. Your hands are at your side. You are in a comfortable position.

(pause)

Take in a deep breath—as deep as you can—hold it while I count to three, one, two, three. Let your breath out slowly, slowly, relaxing, relaxing.

(pause)

Now, I want you to take in another deep breath—very deep—and hold it while I count to three, one, two, three. Let your breath out slowly, feeling yourself becoming more and more relaxed.

(pause)

You are now going to relax your whole body. All the parts of your body will go completely limp.

(pause)

See your face in your mind. Relax all the muscles in your face and head. The muscles feel like feathers that are floating in the gentle breezes.

(pause)

Think about your neck. See the muscles in your neck. See them becoming as limp as noodles.

(pause)

Now relaxation is moving to your chest. Those muscles are beginning to relax. Feel them relaxing. The muscles feel like plastic straws that you can bend again and again.

(pause)

Enjoy the feeling of relaxation as it moves through your arms. See your arms in your imagination. Picture yourself in a big bathtub of warm water. The water is soothing all the muscles in your arms and body. You are completely relaxed. You feel as if you are floating—floating weightlessly in the wonderful warm water that is swirling around and around your body. You are now completely relaxed.

(pause)

Relaxation is now flowing to your stomach. See your stomach in your mind. Feel the muscles as they relax. They become as soft as pudding.

(pause)

Relaxation is moving to the upper part of the legs. Now think about a very big limb on your favorite tree. See yourself swinging on that tree limb. Your leg muscles are just as relaxed as you are as you swing back and forth, back and forth on the strong big limb. You are feeling so good, better than you have ever felt before.

(pause)

Feel relaxation flowing to your lower legs. See the muscles going limp just as spaghetti does when it is lying there soft and pliable on your plate.

(pause)

Relaxation is moving—moving to the muscles in your feet. The muscles in the feet feel as they do when you have just gotten off skates. They want to rest and relax.

(pause)

Now relaxation is moving to your toes. The muscles in your toes feel like soft, puffy marshmallows. Your toes are very, very relaxed.

(pause)

You are now feeling great. You are feeling better than you have ever felt before. You are beginning to feel very smart. It's possible that you are as smart as anyone in this school. I know it—I believe it. You know it and you believe it. There is nothing that is standing in the way of your learning and remembering whatever lessons are given to you in class. It will become easier and easier to read anything whether it is in this class or any other class. You have a brain which is working better for you each day. I know—and you know—that it is so for you.

APPENDIX L

Brain research identifies two types of information processing, sequential, left brain and simultaneous, right brain processing. Studies show a high percentage of LD children are simultaneous learners. Since our schools rely heavily on left brain sequential methods of teaching, it's obvious why LD children have trouble in school. Teachers need to develop a repertoire of teaching techniques that stimulate both sides of the brain, not only to help reach LD children but also to more fully develop the potential of all children. Unfortunately, not much has been developed or published in converting right brain ideas into practical classroom applications. I have been researching and compiling a collection of techniques that encourage simultaneous processing and applying them into the classroom. Common simultaneous activities include any type of visual displays, manipulatives, body movement whenever possible, role playing, deomonstrations, etc. Along with these I'm concentrating heavily on training kids in less known techniques such as relaxation, positive suggestions, visualization, imagery and fantasy. I also use intuition, music, color, mneumonics, metaphors and anologies whenever possible. Results so far have been very positive both in terms of achievement, enjoyment and positive self concept in school.

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Grewenow School

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